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ABSTRACT

This yearbook includes a summary of the research in reading that has been conducted in recent years, and also contains many ideas that have practical implications for the teacher in the classroom. The essays are divided into six major sections: research review, college and adult programs, teacher education, programs and practices, test materials, and research and theory. Included are essays on such topics as improving college reading and study programs by locating and critiquing research, subjective assessment of auto-instructional learning tasks in secondary and college reading materials, eye-movement photography as an instructional tool, prevention of reading problems in higher education, internal reading flexibility patterns among university undergraduates, reading programs in Illinois high schools, improving a school's reading achievement, children's ability to segment sentences into individual words, the use of prediction equations and computer simulation for identifying preferred sensory modality for training in reading, developmental changes in memory attributes of good and poor readers, and interest as a variable in word acquisition. (TS)

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## TWENTY-FOURTH YEARBOOK OF THE NATIONAL READING CONFERENCE

Edited by
GEORGE H. McNINCH
WALLACE D. MILLER

University of Southern Mississippi

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# FOREWORD

The National Reading Conference (NRC), held every year during the winter, has as its purpose to provide an arena for better understanding the continuum of the reading process. Scholars, researchers, and others interested in the development of reading gather to share ideas and research. Throughout the years NRC has provided yearbooks which have given the profession summaries of research that can be used by the researcher, the teacher, and the student of reading. This year the ERIC Clearinghouse on Reading and Communication Skills has collaborated with NRC in producing the yearbook for NRC's members and the profession.

ERIC, the Educational Resources Information Center, was originally conceived in the U.S. Office of Education in the mid-1960s as a system for providing ready access to educational literature. ERIC is now a part of the National Institute of Education (NIE) and, through its sixteen specialized clearinghouses, performs three major functions: (1) acquisition-including evaluation, indexing, and storage for computer retrieval-of recent documents on education; (2) dissemination of these documents through the ERIC Document Reproduction Service (EDRS), and information about them through the periodicals *Resources in Education* and *Current Index to Journals in Education;* and (3) information analysis, activities designed to make the findings of research and the practices of teachers or school districts available and intelligible to teachers and applicable to their classrooms.

It is with this last goal in mind that ERIC/RCS is pleased to work with the National Reading Conference in disseminating their 1975 Yearbook. The purpose of the Yearbook is to provide for those who attended the conference a selected record of the thoughts and ideas that they encountered there and, for those who did not attend, a better understanding of the many complicated facets of the reading process.

The Yearbook includes a summary of the research in reading that has been conducted in recent years, but also contains many stimulating ideas that have practical implications for the teacher in the classroom.

Sister Rosemary Winkeljohann
(Former) Associate Director, ERIC/RCS

# ERRATA

Reading: Convention and Inquiry

*McNinch & Miller*

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# 1974 REVIEW OF RESEARCH ON COLLEGE-ADULT READING

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**CYRUS F. SMITH, JR.**

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The research presented in this review appeared in the literature during the period of May, 1973, through May, 1974. In all, over 300 journals were monitored along with *Dissertation Abstracts*. A listing of the journals may be obtained from the Publications Committee of the National Reading Conference. An added feature of this year's review is the inclusion of fugitive reports found in *Research in Education*. These reports will be found in the bibliography, along with appropriate ED numbers for ordering microfiche copy.

Consistent with previous reviews, this review covers the published literature concerned directly with reading behavior at the College-Adult Level. The review is organized into six main categories: (1) Psychology of Reading Behavior, (2) Research Methodology, (3) Tests and Testing, (4) Reading Pedogogy, (5) Reading and Atypical Learners, and (6) Sociology of Reading. Each category is, in turn, broken down into sub-categories. It should also be noted that the organization of the review, along with the literature cited therein, represents the subjective judgment of the writers. We might also add that we have taken liberty to provide critical commentary on much of the research cited. Similarly, we offered opinion on the current state of research in some areas and needed directions for future research.

## Psychology of Reading Behavior

### Learning by Reading

This section of the review presents the literature dealing with learning by reading. In the main, research that was reported investigated the effects of the following on learning from text: (1) inserted pre- and post-questions, (2) advance organizers, (3) recitation strategies, and (4) organization and representation of text.

Owen (1973) synthesized the extant literature on adjuncts and argued that questions inserted in text provide three types of learning strategy cues: (1) Specific, which use main concepts or ideas; (2) Organizational, which provide means for organizing or structuring content; and (3) Inferential, which provide unique perspectives on the content. Assigning undergraduate education majors to two studies to explore the efficacy of questions based on the above learning strategy cues and retention, she confirmed that the three types of questions created different factual retention of material read on immediate and delayed measures of recall.

In a similar study, Richards (1972) researched the effects frequency, position, and conceptual level of post-questions on relevant and irrelevant learning of prose. In the first study, Ss were studied under conditions of meaningful learning post-questions derived from Ausubel's theory of meaningful verbal learning or post-questions requiring rote learning. All questions appeared after every two or four paragraphs of text. Looking at measures of relevant and irrelevant recall, the investigator concluded that meaningful learning post-questions were superior to rote learning questions. Moreover, it appeared that the frequency of questions only affected meaningful learning questions. The results reported from a second study were also in accord with the above findings.

The purpose of Boker's (1974) study was to investigate the effects of interspersed pre- and post-questions on the delayed retention of relevant and incidental learning from written material. A 3 x 2 x 2 ANOVA design with repeated measures was selected for the study. The first factor consisted of interspersed pre-questions viewed by Ss before reading or interspersed post-questions viewed by Ss after reading. A control condition was simply text read without questions. The two repeated measures factors were immediate or delayed testing and type of retention (relevant or incidental). The researcher reported that: learners in pre- and post-question conditions retained significantly more relevant information than their control counterparts on both immediate and delayed retention measures. It was also noted that the post-question group retained more incidental material than pre-question or control groups on both measures of retention.

El-Azzabi (1973), in an interesting study, explored the effects of attitude and direction of interspersed questions on learning neutral written material. Using a 2 x 3 (Attitude x Direction of Question) factorial design, 108 female nursing students read material dealing with abortion. As measured by a Likert-type scale, the subject pool was divided into pro- or anti-abortion attitudes. Questioning conditions comprised questions with all-false or all-true answers. Overall data analysis revealed a significant difference between attitude groups on measures of learning. However, the attitude x Direction of Question interaction was not significant.

The interactive effects of verbal and perceptual aptitudes and reading-study behavior under questioning conditions was studied by

Wilson (1973). One hundred eighty five Ss were randomly assigned to one of six treatments in a 3 (types of Inserted Questions) by 2 (highlighting or No Highlighting) factorial design. The material read was science material containing text and diagrams. Dependent variables were relevant and irrelevant measures of achievement derived from text and diagrams and amount of material highlighted by Ss as they read. The researcher concluded that: (1) inserted questions facilitated the acquisition of incidental material, (2) highlighting increased by diagrammatic information and decreased for text. In addition, the ATI disclosed that associative memory ability interacted with the acquisition of relevant text information and time spent on learning task.

Hiller (1974) carried out a similar investigation. In his study 700 undergraduates read lessons from an introductory mathematics text. Specifically, immediate and delayed retention of text were studied as a function of readability level of text and level of inserted post-questions. In addition, anxiety and self-confidence were employed as personological variables. Results of the study revealed that regardless of whether inserted post-questions were easy or difficult they produced less incidental learning of low-readability material. In contrast, difficult post-questions produced less learning of average-readability material. Moreover, all differences between treatments diminished to nonsignificant levels after a two-week period. Last, learning was found to be positively and significantly correlated with anxiety and self confidence under conditions of low readability but not average readability.

In another penetrating analysis of questioning and individual differences, Ravitch and Berliner (1974) studied the reading behaviors of 87 junior college subjects who were randomly assigned to one of four treatments: Question Position (before or after) and Question Type (Lower Order or Higher Order) inserted in prose. Five measures of aptitude were obtained: vocabulary, perceptual style, verbatim recall, anxiety, and semantic memory. Subjects read a 1,525 word passage on "The Lisbon Earthquake." The criterion measure included even numbers of lower and higher order questions. Statistical differences among group means were obtained. More important, however, was the fact that performance on a measure of vocabulary interacted with treatment. This finding led the investigators to suggest that Ss with low vocabulary ability might profit under learning conditions with higher order questions placed after material. Subjects with high vocabulary ability, on the other hand, might benefit from reading conditions with no questions.

From a different perspective, McConkie, Rayner, and Wilson (1973) examined the effects of manipulating reading strategies with questions and feedback. In their first study, 140 introductory psychology undergraduates read material from the *Scientific American*. Twenty Ss were assigned to each of five groups defined by type of question received after reading each of five passages: Factual questions, questions related to numerical content, higher order questions, and questions related to structure. In addition, a recognition group received words or phrases after reading and a higher order group always received the same higher order questions after reading. Subjects recorded their reading time and protocols were scored after each passage. An additional dimension of the experiment centered around paying Ss cash in exchange for points earned when questions were answered correctly within time limits. The second study was a partial replication of the above study with a change in the payoff schedule. Among other findings, the experiments revealed the following: (1) subjects can adjust both their reading speed and the information they acquire according to external conditions, (2) reading speed can be influenced by payoff structure and anticipation of kind of test, (3) the type of information acquired varies according to expectations of what will be needed to answer questions, and (4) the ultimate effect of increasing reading speed depends on the type of information being tested.

The results of the above study apparently forced McConkie and Rayner (1974) to re-examine the manipulation of reading strategies through payoff conditions. In this investigation, reading speed and test performance of 70 undergraduates were studied when four variables were manipulated: existence of payoff structure, type of payoff structure, clarity of payoff instructions, and presence or absence of questions after passages. The findings of this study were consistent with those reported earlier. First, Ss change their reading behavior with the demand of the task. Second, payoff structures can be used to explore reading strategies. Third, it is possible to define reading strategies in natural situations by specifying the payoff conditions.

Along with the contributions of others, Barry (1974) reviewed the work of Rothkopf and Frase on mathemagenics. The end product of his review was research and development directions for those interested in the psychology of reading instruction. For example, hypotheses related to learners who are acquiring or have not acquired reading ability on control processes is presented. With regard to text improvement, the author discusses the need for a conscious awareness of the many mathemagenic behaviors which might lead to the development of improved textual material.

In another synthesis paper, Chaudhari (1974) focused on the role of questioning in thinking and learning from text. In contrast to the above paper, Chaudhari placed his review in the context of learning problems posed further acceleration of the knowledge explosion and alludes to the idea of charting alternative futures for the role of questions in learning from text. What evidence that is available suggests that this paper is moving in the right direction. It is time to seriously consider the role questions as a means to facilitate learning. Moreover, we sorely need an in-depth synthesis paper which offers clear directions for future research and development. Unfortunately, this above paper misses this goal.

Research stimulated by Ausubel's subsumptive learning theory continued to appear in the literature. Graver (1972) researched the interactive effect of advance organizers and high and low organizing ability on the verbal learning of 143 undergraduates. Ss were treated with one of the following conditions: (1) Advance Organizer followed by learning passage, (2) Advance Organizer preceded by learning passage, and (3) an Historical Overview followed by learning passage. Although there were no significant differences among treatments, high organizing subjects performed better than low organizing subjects on a retention test. The interaction between organizing ability and treatment condition was not significant.

Closely akin to the above study, Tyrell (1973) investigated the effect of position of cognitive organizer on learning verbal material dealing with biology. In essence, the study manipulated the number and format of organizers over eight treatment conditions. With Scholastic Aptitude Test scores as a covariate, it was reported that all treatment conditions required the same amount of time on task and that learners in the six organizer treatments achieved significantly greater learning than learners in the control group.

A number of researchers also explored the effects of advance organizers and structured or introductory overviews on learning. In one study, Caponecchi (1973) examined the effects of an advance organizer as compared to an introductory overview on the acquisition of mathematical concepts by reading. Employing a 3 x 3 fixed effects ANOVA design, 91 undergraduates were assigned to one of the following treatments: Advance Organizer, Introductory Overview, and Control. Students were also assigned to one of three ability levels determined by ACT English and Mathematics scores. Of particular interest, was the significant interaction obtained between treatment and ability level. Low ability students receiving either an organizer or introductory overview scored higher on achievement measures than controls. It should be pointed out, however, that no significant difference between advance organizer and overview groups was obtained.

Brigham (1972) investigated the effects of (1) instructions on using structural overviews designed to present the reader with the structure of material in terms of the location of main ideas and details, and (2) the presentaiton of overviews in prose or outline form. Subjects for the study were 210 community college freshmen who scored before the 8th percentile on the Davis Reading Test. Ss were randomly assigned to treatment or control groups. Analysis of variance results revealed that the prose form of the overview under the study facilitated comprehension. The manipulation of instructions for using the overviews failed to yield significant results.

Finally, Johnson (1972) responded to the question: Is an advance organizer superior to an induced set in facilitating learning; Learners were randomly assigned to four treatment conditions which controlled kind of organizer or search set. Findings supported the contention that neither an advance organizer or an induced set facilitate learning from written material.

Comparative studies of the differential effects of advance organizers and questions were also reported. Using 88 introductory psychology students, Felker (1973) explored the differential effects of advance organizers and post-questions on learning prose material covering reinforcement theory. Ss were randomly assigned to: (1) Control group, who received only the prose material, (2) Advance Organizer group, who received expository organizers before reading prose, (3) Adjunct Post-Question group, who received questions after reading, and (4) to a Combined group, who received advance organizers prior to reading and post-questions after reading. The dependent variable was a problem solving task which required the application of concepts and principles learned from the prose. Analysis of variance results indicated that post-questions were superior to no post-questions and that advance organizers were not superior to no organizers. It was also interesting to note that the post-question condition required significantly longer time for completion.

Similarly, Dapra (1972) reported the results of an investigation designed to compare the effects advance organizers and post-questions on the ability of low verbal ability students to learn from written materials. High and low verbal ability students were identified with the Verbal Scholastic Aptitude Test and randomly assigned to four treatment groups: (1) Advance Organizer, (2) Post-question, (3) Repetition, and (4) Control. Subjects read material dealing with

Christianity. Using reading time and prior knowledge of Christianity as covariates data analyses failed to reveal a significant treatment effect. Likewise, no significant interactions between treatment and ability were found.

The effects of recitation strategies on learning from prose continued to be of interest. Extending the early research of Gates on recitation, Giorno, Jenkins, and Bausell (1974) compared recitation to reading alone in the acquisition of facts contained in prose. The Ss for the experiment were 30 preservice teachers who were assigned to either a recitation or read-reread condition for learning of a 455 word passage. A cued recall test was used as a measure immediate and delayed retention of facts. Findings were interpreted as supporting the position that reading followed by recitation is one of the few study skills superior to reading alone.

The purpose of the study by Schultz and Dangel (1974) was to identify instructional treatments that facilitate recitation for learners debilitated by anxiety. The anxiety level of 72 Ss was defined as debilitating or facilitating. Members of each group were assigned to recitation conditions emphasizing or minimizing the evaluation of responses. The following conclusions were based on this and previous research: (1) learners retain more when they do not know when they will be asked to recite, (2) moderate rates of reciting are superior to frequent rates, and (3) minimizing the evaluation of responses facilitates incidental learning.

Two studies examined the effects of organization and representation variables on learning from text. In Saif's (1973) study the effects of paragraphs, organized according to Rule-Example-Rule, Rule-Rule-Example, or Rule-Example and the presence or absence of an Abstract or Summary of the learning of 415 Ss. On the basis of his findings, the author concluded that neither the addition of extra information in the form of rules or abstracts and summaries, nor the organization of paragraphs improve learning.

Yancey (1972) pursued inquiry into the graphic elaboration of text. In his study, 345 undergraduate Ss were randomly assigned to one of five levels of textual elaboration: Text only, text elaborated with outlines, text elaborated with viagraphic representaiton of outlines, text elaborated by graphic representation of inherent structure, and text with graphic elaborations of concepts to be constructed by learners. Immediate and delayed measures of achievement were taken. Graphic elaboration of text was found to be associated with superior learning. However, the fact that graphic elaboration differentially evokes facilitating images for learning over basic text was not demonstrated.

Dyer and Kulhavy (1974) offered additional evidence for the appropriate sequencing on instructional material under programmed conditions. Specifically, their objective was to determine whether facilitation due to sequence effects in programmed learning can be counterbalanced by mass practice decrement. Subjects for the study were 176 Arizona State undergraduate who were randomly assigned to either three placebo treatments or an experimental treatment to observe the effects of practice distribution and frame order. Thus, the design was a 2 (Distributed vs. Mass Practice) x 2 (Logical vs. Random Order) x 2 (Multiple-Choice vs. Constructed Response Test). Material read was instructional frames on medical diagnosis. Results indicated that when learning material is disordered and separated, learners are less willing to maintain high levels of attention. It seems, then, that sequence should be given close attention when material is not redundant or learners have low preinstruction background for material to be learned.

Greeno and Noreen (1974) tested the hypothesis that if a sentence is consistent with the expectations developed by Ss after reading earlier sentences, the sentence would be easier to assimilate than if it were unrelated to earlier sentences. To test the hypothesis, eight Ss read 11 sentences. The task for subjects was to recall substantive content and to determine if statements were explicitly or implicitly stated in material read. The experimental material read consisted of three kinds of paragraphs, each containing seven sentences with hierarchically organized information The main finding was that as readers assimilate information, structural relations among concepts are developed. These relations represent the semantic content of material read. Implications for developing reading material is that learning is facilitated when new information is consistent with the semantically derived predictions of the reader.

As can be seen, a considerable body of research on learning by reading continues to evolve. In the main, this research reveals that a number of variables enhance learning by reading. The important question is: Where do we go with what is currently known about learning by reading? First, there seem to be sufficient evidence that a taxonomy of learning by reading behaviors needs to be generated. This taxonomy should comprise a listing (not to be confused with comprehension) of behaviors adults perform to indicate comprehension or learning. Second, enough evidence exists to justify the development of teaching strategies and environments wherein the learner acquired skill to "read" or to "map" the content of prose. This naturally leads the generating of rules for writing textual material in such a way that structure is more explicit to the learner. Finally, although there is still content, adjunct aids (questions, advance organizers, and the like) may well facilitate learning. Should we not, then, develop rules for writing advance organizers and questions?

### Physiology

Too few studies concerned with physiological aspects of reading were reported in the literature. Other than the previously discussed study by Wark (1973) on heart rate and reading, only one study (Powers, 1973) falls within this area. Briefly stated, his hypothesis was that behavior and learning are influenced by blood sugar levels. Subjects for the study were children and adults found in a Dallas, Texas, private practice. Following comprehensive medical workups Ss were assigned to dietary programs providing (1) limited carbohydrates, sugar, coffee, tea, and cola. (2) enzymes to enhance the metabolism of protein as a source of glucose, (3) concentrated Vitamin B and C supplement, (4) complete vitamin-mineral program, or (5) adrenal-cortecal extract and other hormonal supplements. The results of the study pointed out that not all educational difficulties are the result of inadequate teaching or environmental stress. As an example, "glowing successes" gained as much as three years in reading comprehension. Sadly, only evidence is given for six of the 260 Ss. Nevertheless, there is both evidence and argument in the medical literature supporting the contention that reading research along these lines could be profitable.

### Visual Perception and Reading

Visual perception and reading continued to be a focal point for researchers. The research topics ranged from visual screening of poor readers to perceptual processes involved in word recognition.

Unlike younger learners, college students experience difficulty in compensating for visual defects. The problem become more manifest as increased emphasis is placed on reading assignments at the college level. Identifying the possible visual problems affecting the academic performance of low ranking college Ss was the purpose of a study by Zaba et al. (1974). Seventy low ranking freshmen were screened with a stereoscopic instrument. A significant number of students failed one or more of the tests involving binocular function.

Lane et al. (1974) explored the relationship between schema theory and reading. Subjects were 38 college students in a developmental reading program. Good and poor readers were identified from a pool of average and poor readers with the Diagnostic Reading Test. The Schematic Concept Formation Task which requires SS to indicate which graphic stimuli from two or more classes belong together was also administered. The researchers were intrigued with the finding that the Diagnostic Reading Test was weak in isolating poor readers. They failed to remember, however, that there were really no good readers (only average and poor in their sample). They were also impressed with the fact that there was a significant difference between scores of good and poor readers on the schematic task. Their inference was that performance on the schematic task is operative in reading. This inference would have been correct had the extreme groups been formed by performance on the schematic task rather than reading.

Were it not for the investigations reported by Raygor (1973) and McConkie and Rayner (1975), one might well conclude that perceptual processes as they relate to accomplished reading behavior were of little interest to researchers representing the field of reading. In this tudy 36 undergraduates read sentences projected by a Super-8 projector at 18 frames per second. The statistical design was three levels of factor A (Ss viewed sentences one letter at a time, Ss viewed sentences one word at a time, Ss viewed sentences a phrase at a time) and two levels of factor B (perceptual units appeared one after another in the center of the screen or perceptual units appeared one after another left to right across the screen). Subjects were asked to write what they saw. The ANOVA results revealed that letter-at-a-time presentations were more difficult to read than word-at-a-time or phrase-at-a-time presentations. And, word-at-a-time presentations were found to be easier to read than letter-at-a-time or phrase-at-a-time presentations. It was also surprising to note that readers were handicapped by having words appear left-to-right in their normal spatial conditions. Hopefully, the experiment will be replicated under varying conditions.

Hemifield differences in the recognition of words were investigated by Miller and Turner (1973). Specifically, an attempt was made to determine whether laterality differences affect the internalization of scanning patterns and to determine the relationship between laterality preferences and reading skills. Sixty Ss (equal numbers from four grade levels: second, fourth, sixth, and college) participated in the study. A three-channel tachistoscope was used to present stimulus words four and five letters long to the left or right of fixation point. Word recognition scores were obtained at the end of trials by asking Ss to read from a list containing stimulus words. Results indicated that from fourth grade on better recognition occured for words presented to the right. Hemifield differences were also found to be significantly related to reading achievement.

McConkie and Rayner (1973) presented an interim report of their programmatic research on the perceptual span as observed with an on-line computer technique. Their first experiment involved manipulating text which was available at varying distances from the point of fixation. Materials were three versions of mutilated text. Two variables were manipulated: Type of Text Mutilation and Size of Presentation Field. Subjects were six high school students. Data were gathered by presenting text via a small computer with a cathode ray tube. Data offered evidence that accomplished readers respond to letter and word-shape information within all areas of about 11 character-positions from the fixation point. Information on word length, however, is picked up by readers as far as 13 character-positions from the fixation point.

In their second experiment, 10 undergraduates read 15 short paragraphs. For each paragraph a critical word location was identified as a point where a simulus change would take place as the Ss read. Examples of stimulus changes were: a word was replaced by a word that semantically and syntactically was acceptable in the paragraph, a letter string similar to the original word, a letter string with the same word shape, and so on. Additional variables manipulated were type of stimulus change and location of the boundary which triggered the display. Again data were gathered via a small computer with a cathode ray tube. Data analysis revealed the following: Readers did not appear to detect differences between words and non-words further than four character-positions to the right of fixation. In addition, although readers picked up information about words far into the periphery, they were not discriminating among words and non-words. Nor were they identifying the meanings of words. In addition to the contribution this research makes toward the understanding of accomplished reading, it is also important for the research methodology employed. Hopefully, reading researchers will seek McConkie's complete report of this project.

The purpose of Baron's (1973) study was to test the phonemic-stage hypothesis that a reader recognizes words by thier pronunciation when reading quickly. Eight subjects were run through a reaction time experiment to indicate if phrases made sense, i.e., In the Haul, In the Hall, Boxing Bolt, Boxing Bout. Since no significant differences were obtained for response times required a disambiguate the lists, it was concluded that meaning can be efficiently derived by visual analysis of text without the use of an intermediate phenomic code (inner speech).

An opposing view to the visual analysis to meaning position is that pronunciability is a strong property which may be used to encode words. Read words, then, may be encoded differently than nonwords, since they are absent from lexical memory and assuming encoding involves a search of the internal lexicon. Walker (1973) researched the effects of pronounciability on encoding. The task for eight students was to categorize 96 real words and 96 nonwords. The same words were later presented by slide projector at four-second intervals for the Ss to designate as a real word or nonword. It was found that categorization time increase with nonword pronounciability and decreased with real word familiarity. The researcher also noted that rare words and highly pronounceable nonwords were equally recognized. These findings suggested that the phonemic properties of words are used during encoding.

Spoehr and Smith (1973) also conducted a series of experiments to determine the role of syllables in perceptual processing. In the first experiment, 10 Ss were tachistoscopically presented sets of two-, three-, or four-syllable numbers to identify vocally. Syllables were not found to differentially effect response time. In the second experiment, 10 subjects completed a task similar to the one above. However, a list of 14 one- and 14 two-syllable words were used. Tachistoscopic accuracy was superior for one-syllable words and interpreted as meaning that a syllable functioned as a higher-order perceptual unit. In the last experiment, 16 subjects were exposed to a task similar to those reported earlier. Stimuli, however, were 10 one-syllable and 10 two-syllable words separated into frequency classes according to Thorndike-Lorge frequency. Again, a syllable effect was found, regardless of frequency class of words. These results were discussed in terms of three-stage processing models of perceptual processing during word recognition.

Cognitive psychologists propose that pattern recogniton represents sequential hierarchically ordered stages moving from analysis of features to abstract and superordinate classes and names. Henderson (1973), however, presented a study investigating the nonvisual aspects of search behavior by utilizing the property of letter names. In essence, five female graduate and undergraduate subjects searched two kinds of letter matrices in a letter cancellation task. In the first matrix, part of the letter list was confusable, the other part nonconfusable. Two targets, one of either case, were used in the second matrix search. The dependent measure was letters searched per minute. Henderson's results led him to conclude that there is, indeed, a non-visual factor in letter search wherein name-sharing independent of visual similarity produces eihter a facilitory or interfering effect.

Last, on the basis of a stimulating theoretical and empirical paper, Rumelhart and Siple (1974) offered a model for the recognition of tachistoscopically presented words. The model presented takes into account the geometric characteristics of words, word frequency effects, effects due to letter transition probabilities, and effects due to physical similarities of words. With regard to the reading process, the paper unravels the puzzling features of word recognition data that can be atrributed to the physical characteristics of words and not psychological processes. Finally, it is suggested that interactions observed in the reading processes are not reading specific, but a case of general sensory-memory interaction inherent in all perceptions.

Although our understanding of perceptual processes and reading behavior has come a long way, current perceptual models still present conflicting views. In many cases models explicating perceptual processes and reading appear to be generated from a "grab bag." As revealed by USOE's *Literature of Research in Reading with Emphasis on Models* and IRA's *Theoretical Models and Processes of Reading*, sufficient psychological, linguistic, and empirical data are available to breeed better models of perception and reading for hypotheses generation.

By using better models, better research questions will surely evolve. As an example, we need interdisciplinary teams to answer the question of what is the role of the ocular system in reading? Systematic information is also needed to describe the perceptual units and processed involved in initial recognition, along with the effects of semantic and syntactic environments. Valuable research in the future will also be concerned with the *hows, whens, whys* of what happens to visual input at the storage and retrieval level of the reading process.

## Memory Processes and Reading

Despite the current resurgence of research on memory, we know very little about how memory processes affect ongoing reading processes and later recall. Fortunately, researchers in verbal learning have been investigating this area. Unfortunately, work on the topic has not yet interfaced with reading research.

Perfetti and Garson (1973) were interested in the hypothesis that what is normally retained after reading is meaning and what is forgotten is form, particularly over long periods of time. Sixty-four readers read short prose passages from *Psychology Today* and *National Wildlife*. All sentences in the passages were transformed into experimental states. Thus, prose was: (1) altered lexically with meaning unchanged, (2) altered lexically with a change in meaning, (3) altered grammatically with meaning unchanged, and (4) grammatically changed by various transformations. Four Ss each read each version of each passage and were given recognition tests to detect changes in the sentences of passages immediately after reading, 30 minutes later, 24 hours later, and one week later. Findings were consistent with earlier research: (1) rate of retention loss is greatest during the first minutes after reading, (2) surface and stylistic information is rapidly lost, (3) semantic relations appear to be resistant to forgetting. Subsequent studies in the area of reading are needed to confirm that what is remembered after reading includes relational semantic information and lexical semantic information. The importance of themantic relationships and memory also deserves attention.

In a study closely related to the above, Sachs (1974) had 120 Ss read or listen to 24 passages of discourse under one of the following conditions: Semantic (meaning of base discourse changed by interchanging subject and object, by negation, or by substitution of a word); Active/passive (base discourse changed from active to passive voice); Formal (form of base discourse changed without change in meaning); Lexical (original words replaced by synonyms). The task for subjects was to recognize changes in original material heard or read. Here again, the results demonstrated that exact wording of discourse is not stored in long term memory.

Adding to the mounting evidence that prose material is not stored in memory verbatim, Kintch (Kintch & Keenan, 1973) reported the results of two experiments. In the first, SS read and recalled text contructed from propositional bases at their own rate. In the second experiment rate was controlled. Overall, the results of both experiments supported the notion that propositions are a basic unit of memory for text. It was also found that all propositions are not equally difficult to remember. For example superordinate propositions were recalled better than propositions that were low in hierarchies. We would also like to note that this research offers a base for understanding readability.

One school of thought argues that memory is filled with objects. Kolers (1974), however, argues that remembering is an operation. In a word, we remember in terms of the strategies used to analyze an event, along with the results of the analysis. Kolers ran 12 subjecgs through a signal detection paradigm to distinguish easy sentences from difficult ones in memory. Subjects read 90 target sentences (30 normal, 30 inverted, 30 reversed rotated). Then they searched a recognition deck containing equal numbers of the target sentences as normal, inverted, or reversed rotated, along with 30 new normal, 30 new inverted, or 30 new reversed rotated sentences. The dependent variable was the ability to categorize sentences in the recognition deck as new sentence; same sentence, same form; same sentence, different form. Results revealed that Ss remember a great amount about sentences for long intervals, leading to the conclusion that one reinstitutes the same analytical operations during recognition as during encoding.

Although much has been written in the field of reading about vocabulary, there appears to be no clear conceptual understanding of what information about the meaning of words is activated in memory when a word is encountered in discourse. Contrad (1974) addressed this problem with two studies. Utilizing a color-naming paradigm, her results provided evidence that both meanings of a word having two distinct meanings are activated in memory at the time a word is encountered, despite the fact that there is sufficient contextual information to indicate the intended meaning. For reading researchers, then, remains the task of determining how the readers's subjective lexicon is activated without ragard to available linguistic context.

Along another dimension of memory, Johnson (1974) attempted to ascertain if adults know which portions of prose are likely to be difficult to recall. In all, over 500 Ss were used in the experiment. Based on independent predicitions of what would be recalled after reading a passage and the actual recall of the passage, Johnson concluded that learners can accurately predict the recallability of prose. The implications for reading are that it may be possible to provide readers with strategies for predicting difficult recall units of a passage. In turn, the reader could become more efficient at studying by allocating more time to difficult-to-recall units.

Next, in what was actually a very interestng study of listening with many implications for reading, Ley et al. (1973) desired to find a method of increasing patients' recall of information presented by doctors. Briefly, 20 undergraduates and 40 general practice patients were orally given diagnostic and prescriptive information in traditional form or organized by categories. The dependent variable was correct number of statements recalled. While more research is needed, the results showed that recall of information can be increased significantly by increased categorization.

Last, the purpose of the study by Timmons (1974) was to determine whether delayed auditory feedback during oral reading affects retention. Four groups of 20 Ss read difficult material and took a multiple choice test. The first group read under normal conditions and was tested immediately. Group 2 read under normal conditions and was tested a day later. The third group read under conditions of delayed auditory feedback and was tested immediately, while Group 4 read under the same conditions and was tested a day later. Data analysis revealed that Ss reading under normal conditions obtained significantly higher scores. The researcher speculated that auditory feedback may affect the acquisition of information rather than retention.

From the research published both this year and in previous years, it is clear that a major task confronting reading researchers is to sift the existing models for memory processes and determine their suitability for explaining reading behavior. Of major importance should be an explication of organizational process for storage and retrieval during ongoing reading. We should also be interested in the underlying relationships among visual, phonological, articulatory, and semantic aspects of memory. For the accomplished reader, we should also determine how new data is integrated into short- and long-term memory during reading. No doubt, a clearer understanding of memory processes and reading will lead to the development of better instruction in reading strategies and better presentation of textual materials.

**Implicit Speech and Reading**

Of fundamental importance to the development of a theory of reading is resolution of issues related to implicit speech and reading. One popular presumption is that one must speak a word to himself prior to overt vocalization. This position is based on response latency during word recognition. On the other side, the response latency effect is interpreted at the time required to program the vocal apparatus. To resolve the issue, Klapp et al. (1973) ran Ss through three experiments of word naming, picture-word comparison, word categorization, and picture naming. In each case, the words and/or their referents were comprised of one or two syllables. Response latency was measured from stimulus onset until vocalization. The results of the experiment were quite provocative. Word pronunciation latencies were found to be dependent on syllables. Latencies, however, were not found to be syllable-dependent for recognition tasks. Thus, latency was attributed to response preparation for readig aloud and not to word recognition processes. This study supports the contention that implicit speech is not necessary for reading comprehension.

The only other study of subvocalization and reading behavior reported during the year was a doctoral dissertation (Voluse, 1973). The purpose of this study was to compare the effects of speed reading instruction with and without subvocalization extinction training. A sample of 29 college students were assigned to a treatment providing training in the rapid discrimination of cognitive units or rapid discrimination training plus audio-feedback from the geniohyoid muscle area. Dependent variables for the study were instances of geniohyoid subvocalization, thyroid subvocalization, reading speed, and comprehension. Trend analyses revealed substantial reductions in thyroid subvocalization and increases in speed for each group. Findings also showed that geniohyoid subvocalization was temporarily suppressed but asserted over time for each group.

The results of the above studies are interesting, particularly when viewed in light of earlier research showing that competent readers tend to subvocalize as they encounter difficult material. The question of whether phonological representations of words is always produced remains open. If a reader does, in fact, subvocalize, is implicit pronunciation an aid to meaning and retrieval, or does it simply act as a speed reduction device to prolong processing during reading?

### Oral Reading

As in the past, the study of the oral reading behavior of adults continued to interest researchers. Russell (1973) observed the oral reading patterns between functionally illiterate adults and developmental readers. Functional illiteracy fell between 2.5 and 4.0 grade levels for Ss 16 years old or older. The same criterion was used in selecting second and thrid grade developmental readers. Instruction and frustration reading levels were obtained for the sample and the resulting protocols analyzed with the B-S-R-Error Analysis System. Findings of the study suggested that little difference exists in the skill difficiencies exhibited by readers, regardless of age. As a result, the research posed the hypothesis that approaches to reading instruction insuring immediate acquisition of reading skills may well deprive illiterate adults of reading independence.

### Reading Rate

Dalrymple-Alford (1973) attempted to determine if delaying auditory feedback would result in a dispropotionate decrease in reading rate as the syllabic length of the words increased from mono- to bi- to tri-syllabic words. Twelve male and 12 female students at the American University in Beirut read 12 passage consisting of 30 randomly ordered words (five words per line). Four of the passages were of mono-, four were of bi-, and four were of tri-syllabic words. The passages were read randomly one after the other under either a delayed or immediate auditory feedback condition. Feedback was given through headphones via a tape recorder. Data was analyzed using an analysis of variance on pause time and vocal time. It was found that each unit of time spent vocalizing during oral reading is increment by a constant amount when feedback is delayed, regardless of factors that cause the total duration of vocalization to vary under conditions of immediate feedback. This article continues a mode of research attempting to prove and/or disprove previously generated hypotheses and to generate new hypotheses regarding auditory feedback.

**Personalogical Variables**

A large quantity of all research reported dealt with the realtionship of personological variables to reading as a secondary research objective. This section presents research with the primary objective of exploring reading and personological variables.

Bishop (1974) sought answers to the following questions: (1) What effect does anxiety have on readership? (2) Does anxiety have an effect on what is learned under reassuring or threatening conditions? Described by anxiety levels and health, 123 college students were asked to read information under one of two conditions. Under one condition the material carried a scare headline. Under the other, a reassuring headline was carried. Analysis of data supported the idea that high anxiety Ss read more than a story with an encouraging headline. It was also interesting that no evidence was uncovered that linked anxiety to the avoidance of threatening material.

Cavano (1973) researched the self concept and academic achievement of 93 post-secondary students identified as low-achieving. Measures of students' behavior included the Tennessee Self Concept Scale, the Reading Comprehension Test, and the Ego-Inventory Scale. The hypothesis that self-concept would predict achievement after 11 weeks of instruction was not supported.

With particular attention to Bernstein's theory that linguistic expression may determine for the speaker a loss or an acqusition of skills requisite for educational and occupational success, Ford (1972) investigated variables involved in the reading ability of 60 first-year college students. Regression analyses revealed that intelligence, SES, and interest in reading predicted reading achievement. Linguistic expression failed to account for a significant portion of the variance associated with reading ability. Probing of individual subjects, however, led the researcher to conclude that good readers' linguistic expression resembled Bernstein's "elaborated code." Poor readers' speech more closely resembled the "restricted code."

One aptitude that appears to be unique is modal preference for learning. Kolin (1972) tested an alternative strategy for allowing students to select their most effective learning channels. Subjects were asked to rank communications channels prior to learning. A modified Latin Square design was utilized to process each of 180 college students through both the printed page and slide tapes. Dependent variables were time, information gain, and gain per unit time. On the basis of the results the following conclusions seemed warranted: (1) students have a preference for learning channel, (2) students are aware of their most efficient learning channel, and (3) learning rate increases significantly when the preferred channel is utilized.

Last, Kingston et al. (1973) reported the preferences of college women for letters of the English alphabet. One group of 57 college sophomores was asked to rank order capital letters in terms of preference for appearance. Letters were presented in alphabetical sequence. A second group of 21 Ss performed the same task when the letters were presented in random order. Correlational analyses substantiated the fact that women develop a definite preference for letters of the alphabet. It was also found that individuals vary in their preferences. Perhaps after similar investiattions are conducted with children, we can begin to develop modes of letter-learning instruction based on the preferences of learners for letters or the aesthetic qualities of letters.

All information on personological variables and their role in reading behavior and its acquisition is important. We would like to see, however, increased emphasis on the attentional and motivational systems of the learner. Research in this area could lead to better reading curriculum design for adults.

## Reading Interests

The results of the National Assessment findings on literature were presented by Simon (1974). A total of 90,000 young Americans comprised the sample responding to the survey on attitudes, involvement, and reading inventories. In the area of attitudes, a majority of the adults reported that reading great literature was of personal value. They also felt that literature should be taught in the public schools. The reasons most often given for why it should be taught revealed that adults had an understanding of the deeper values of literature. It was also interesting to find that more teenagers than adults viewed literature as valuable because it exposed one to other points of view. Twice as many adults, on the other hand, cited the value of reading as a means of learning how to think. Another encouraging finding was the 76% of the adults surveyed reported that they had read at least one work from eight categories of literature. Similarly, 64% of the adults indicated that they had read a novel. What appears to be lacking from the survey, however, is whether reading novels and the like is a frequent behavior.

The library use and reading interests of adults were investigated at least three times. Kronus (1973) documented the fact that library resources are conceptually and historically linked to mass education and literacy. Then she set out to provide information on factors leading to public library use of adults. A clustered area probabiliry sample of 1,019 adults was used. Regression and path analysis explained socio-demographic and survey data. On the one hand, it was found that education, family life style, and environmental factors affect adult library use. On the other, age, sex, and race appear to have no apparent impact. The most significant finding, however, appeared to be that approximately 80% of the variance related to the rate adults use the library is still unexplained.

What is being read––by whom, for how long, for what reason, and how does it fit into daily adult activities? These questions emboldened Sharon (1973) to seek answers. Using an extensive survey questionnaire data were obtained from a national sample of 5,067 adults. It was not too surprising that the survey revealed that reading is not an isolated act, but occurs in the context of more general activities such as working, shopping, traveling, and the like. Other findings of the study were that the average adult reads about two hours per day, although adults differ greatly in the amount they read. And, as with the use of the library, an individual's life style, as represented by SES is related to what he reads.

There has been a great deal of legitimate confern with the hypothesis that adult reading behavior not only results from situation but also acts as a determiner of situation. McGavran (1973) provided some interesting insights to this hypothesis by exploring the reading interests of college students and prisoners. The instrument used to collect data was a fixed-alternative response survey based on categories of presumed reading interest of adult males. It was concluded that no significantly different reading interests differentiate college students and criminals. We believe that this study once again clearly points up the burning danger kindled by reading specialists when they over-simplify assumptions about the widespread effects of reading behavior.

**Reading and Listening**

There are a variety of theoretical positions which explicitly or implicitly deal with the relationship between reading and listening. Moreover, cluttered as the literature is with research on the topic, one might hope that research and theory would have been pulled together into some understandable framework. This has not been the case. Sticht et al. (1974), however, met this need. Their review of selected theory and research on language, reading, and development is, in our opinion, the most significant contribution made on reading and listening in recent years. Indeed, it is a reference shelf item.

King (1973) designed a study to identify the joint influence of presentation time (10, 20, or 30 seconds) and listening to different kinds of material (paced, normal linguistic breaks, and atypical linguistic breaks) on learning a 25 word passage. A total of 96 Ss were run. Learning time was the dependent measure. In general, total learning time was found to be shortest under normal linguistic breaks. The most divergent findings was that males take far longer to learn material with atypical linguistic breaks than do females.

What evidence that is available indicates a correlation between listening and reading comprehension. However, this is the only consistent finding. The major objective of Young's (1973) study was to compare reading and listening comprehension under carefully controlled experimental and testing procedure. Undergraduates were assigned to a condition where 14 informative messages were either presented by tape recorder or film at 175 wpm. A measure of immediate and delayed retention revealed no significant differences between treatment groups. This study raises the question of the nature of the relationship between listening and reading comprehension.

Peterson (1973) reported the first study investigating the combined imports of telegraphic prose, compressed speech and aural, visual, and aural-visual modalities. A total of 560 University of Miami students were randomly assigned to one of 24 treatments in which half listened to one of 12 telegraphic prose compressed speech combinations and the other half read or listened to the same material. The experimental material was a 2,692 word passage. Dependent variables comprised learning efficiency, reading rate, and reading time. Comprehension level for 175 wpm speed was found to be maintained at 275 wpm for both listening and listening reading conditions. The comprehension of telegraphic prose was just as high at a 20% reduction level as traditional versions of both listening and listen/reading at 175 and 275 wpm rates.

Clearly, the research on reading and listening is not tied together. What is needed is the construction of more tentative models such as that produced by Sticht and his associates. From this point, components of models in need of empirical support can be identified. In the meantime, further explorations of syntactical and logical structures as they underly reading and listening competence are important.

## Reading, Language and Other Activities

Shepherd (1973) investigated the relations between knowledge of word parts and knowledge of derivations. A total of 178 freshmen were administered measures of knowledge of formations, formative derivations, nonformatives, and nonformative derivatives. The Quick Word Test was included as a measure of intelligence. Data on word-part study was also collected. The most significant finding was that knowledge of formatives is significantly related to knowledge of formative derivatives, even when verbal intelligence is partialed. The following implications were drawn: (1) instruct students that meanings of English words and formative prefixes are related to the meanings of derivatives comprised of these elements, (2) instruct students in the meanings of formative prefixes they do not know, and (3) do not instruct students that meanings of Latin roots and nonformative prefixes are related to the meanings of derivatives comprised of these elements.

The interrelationship among reading ability, paradigmatic language, and intelligence was studied by Hornsby (1973). She administered the C/A Oral Language Inventory, Diagnostic Reading Tests, General Aptitude Test Battery, and Otis Quick-Scoring Mental Ability Test to 120 Ss drawn from junior college classes, vocational classes, and developmental reading classes. The most important finding appeared to be that there was no significant correlation between reading ability and paradigmatic language responses. Given the assumption that language development is sequential and hierarchical, this finding might have been expected since the population was probably at the upper end of the continuum.

Follman and Lowe (1972–73) summarized the results of their research program on critical reading and critical thinking. Measures of critical reading, critical thinking, reading, scholastic aptitude, and scholastic achievement were obtained from 58 fifth graders and 57 twelfth graders. Along with factor analyses, a number of regression models were computed. In general, there results suggested that the same cognitive processes underly critical reading and critical thinking ability, and that both critical reading and critical thinking ability can be predicted with a measure of language ability. We might point out that in some cases their sample was small for the kind of analysis used.

## Readability

Investigations on readability ranged from validating readability measures to instructional materials development. It was the intent of Kincaid and Delionbach (1973) to validate the Automated Readability

Index (ARI). In brief, in computing the ARI of material a modified electric typewriter is used to compute average word and sentence length. Experimental reading material was written at 8th, 12th, and 16th grade levels, as measured by the ARI, and presented to 110 National Guardsmen. In addition, data obtained with the Armed Forces Qualification Test (AFQT) were available for each subject. Data analysis was simply the computation of correlations between comprehension scores on experimental material and the AFQT. Unfortunately, this procedure in no way established the validity of the ARI as a measure of readability. An interesting side effect of the study, however, was the finding that the lowering of the readability of material does not necessarily improve comprehensibility. Put in different words: Writing down material may penalize the writer without any resulting benefit to the reader.

Siler (1974) argued that the readability levels of United States Coast Guard Correspondence study material is a contributing factor to enlisted personnel's failure to complete courses of study. Siler randomly selected courses from a sample of 94 and computed their readability levels. After establishing the fact that the mean reading level of Coast Guard personnel was 11.2 grade level and that reading level of course material was 13.6 grade level, the following alternatives were offered: the U.S. Coast Guard should lower the readability of its study material or implement reading programs.

Next, Dyson (1973) mounted a study designed to provide a guide for developing more readable materials for newly literate adults using the Housa language. Written language samples were obtained from newspapers, advertisements, Muslim books, etc. Spoken language samples were obtained from home and market dialogue. From a corpus of 65,980 words lists of the frequency words from written and spoken discourse were generated, along with various frequencies among categories of content words, groupings by part of speech, words borrowed from English, and so on.

Lastly, McLauglin (1974) found that an Englishman's educational level, social class, sex, and age all contribute to the degree of linguistic difficulty which he finds acceptable in reading matter. Determiners of acceptability were related to readability as measured by word and sentence lengths. In addition, long sentences were found to be difficult because comprehension depends upon combining cortical patterns evoked by grammatically related elements. In long sentences, however, the pattern evoked by one element may decay before the next related element is read. Long words appeared to account for difficulty because they tend to be more precise and require longer amounts of time to categorize semantically; but, the longer the search for a word meaning, the more likely the preceding context will be lost beyond recall.

## Cloze

The cloze task continued to be of interest as a measure of reading comprehension. Oller (1973) reviewed the literature regarding various aspects of the cloze procedure as a measure of readability, vocabulary usage, etc. from Taylor's initial work in 1953 to 1971. He presented some cautions to be used when the cloze is adapted for languages other than English. Mainly, the article focused on the most widely and successfully used procedures for cloze tests, particularly as they have been applied to the measurement of second language proficiency. An attempt was also made to resolve some of the mystery concerning just what cloze tests measure.

Klare, Sinaiki, and Stolurow (1972) described the cloze procedure and showed how it can be used in different situations when its features are considered. In addition, they presented the results of two cloze experiments. One experiment involved the use of a four point attitude scale toward the cloze procedure and the second involved the use of the cloze technique as an evaluation tool regarding the accuracy of technical English translated into Vietnamese. The findings of the first experiment indicated that the cloze is acceptable, fast, enjoyable, and sufficiently acceptable to challenge graduate students. It was also learned that the best deletion pattern for readers at 4th to 6th grade ability levels appears to be every ninth or tenth word, and, that for average readers every fifth word deletion provides the most efficient test. The second experiment revealed that (1) the use of the cloze procedure was valuable as a translation evaluation method, and (2) that cloze should not be viewed as a means of measuring equivalence of meaning between an original and a translated passage.

Fleming, Ohnmacht, and Niles (1973) attempted to devise and defend a deletion strategy from linguisitc theory for a cloze procedure. The cloze tests consisted of: (1) a transitive verb preceded and followed by either a 6, 12, or 18 word constraint with a direct object appearing as part of the context, (2) a compliment verb preceded and followed by either a 6, 12, or 18 word constraint with a direct object as part of the context, and (3) a compliment verb preceded and followed by either a 6, 12, or 18 word constraint with the verb dominating a compliment construction in the absence of a direct object. Thirty graduate students responded to all of the target deletions, but at only one of the three possible levels of context. Items were presented in a booklet containing 50 deletions with the items independently randomized. A 3 x 5 factorial design with repeated measures indicated that while both form class and content yield significant effects, no widely generalizable statements could be traced to either condition independently. It was implied that varying both the degree of context preceding or following a deletion may be appropriate to determine if context influences predictability in only one direction.

Edwards (1973) investigated the usefulness of the cloze procedure as a measure of the reading comprehension of poetry of 600 college freshmen. Subjects completed one of five cloze forms, using each of five possible 1 to 5 ratio delection patterns for each of the four poems in the Sequential Tests of Educational Progress Reading Data analysis revealed that the 1 to 5 ratio deletion pattern did not significantly effect the readability of a cloze test of a particular poem. The reliability of the cloze test for measuring comprehension of a poem also appeared to be as stable as a multiple choice test.

Phillips (1973) attempted to determine whether students who receive instruction in reading by using the cloze procedure would gain more knowledge of business concepts and improve their reading skills in an introductory business course when compared with students who have not had similar instruction in reading. Sixty-seven junior college students were randomly assigned to one of three groups: (1) lectures supplemented by check questions and pre-cloze exercises, (2) lectures supplemented by pre-cloze exercises, and (3) lectures supplemented by traditional reading assignments. Analysis of data revealed that (1) alternate cloze techniques did not have a differential effect on over-all content achievement, (2) alternative cloze techniques did not have a differential effect on general reading ability, and (3) that the effect of the cloze technique on reading skills is significantly better at when check questions are given before reading a passage and then filling in a cloze exercise than when the check questions are not part of the technique.

## Reading Methodology

Periodically, significant contributions are made to the field of reading research by way of improvements in research methodology. Coleman (1972-73) revisited his earlier argument on generalizing research findings dealing with language samples to populations of language material. In the first part of this important paper, he underlines the weaknesses in the statistical designs of research on reading. Here he freely teaches, and well we might add, with examples of current reading research. In last half of the paper, he discussed in detail the limitations reading researchers impose upon themselves by generating hypotheses that can be neither rejected nor accepted in an all or none fashion. Before moving on, this is also an appropriate place to point out that the earlier idea upon which this paper is based was rediscovered by Clark (1974) and discussed in a very elaborate fashion for the *Journal of Verbal Learning and Verbal Behavior* audience.

The measurement of reading improvement was brought under study by Taschow (1973). The research question was: Is residual gain more significant than crude gain or vice versa? The reading improvement scores (Nelson Denny Reading Test) of 158 freshmen and sophomores were examined. Several analyses led to the conclusion that the residual raw score technique is a more precise measure of individual reading improvement. Of course, this study should be replicated.

In addition to improvement in statistical design and the like, we also need insights into how we can improve our research hypotheses. Kingston's (1973) paper presented a number of areas from which research hypotheses on adult reading could be generated. For example, he asks for data revealing the impact of chronological age on reading proficiency. He also raises the question of the degree to which the reading process and habits deteriorate with age. Finally, peering beyond current research issues Kingston reminds the reader that not all types of adult reading are necessarily beneficial. In his opinion, the recluse and the psychoneurotic use reading as an escape avenue. The faddist, on the other hand, uses reading to determine how to follow the crowd. Last, Kingston implies that the mentally ill imitate the crimes they read about and that depressed members of the population find the daily accounts of real life in the newspapers add on more unbearable burden. In a word, this paper clearly demonstrates that there are substantial areas of concern common to the inquiry abilities of sociologists, psychologists, and reading specialists.

## Reading Pedagogy

### Training of College-Adult Teachers

Only two studies relevant to training college-adult reading specialists appeared this year.

A survey regarding the training of Reading Study Skills Specialists at the College Level was reported by Vavoulis and Raygor (1973). Their sample consisted of 38 experts. Of the 38, 35 returned the questionnaire which consisted of 46 items which measure opinion on a sliding scale. Using percentage comparisons, the author reported that in the opinion of experts: (1) students needed a general background in reading at all levels, (2) an education degree prior to admittance to a college-adult training program was desirable, and (3) that prior teaching experience should be a prerequisite for entering a college-adult traing program. It was surprising to learn that a majority of those responding rated language arts, special education, and counseling as low priority areas. This study is weakened by the fact that we do not know how one qualified as an expert in college-adult reading. The article also implied that there are specific programs now in existence for the training of college reading/study skills experts. It would have been most useful if these programs were listed.

Lipp (1973) attempted to determine the state of the art of reading instruction in Adult Basic Education programs (i.e., teacher background, experience, and preparation; types of tests and materials; teacher attitudes toward additional training) in Colorado. Sixty-six part-time and full-time ABE teachers of reading were selected from 24 centers throughout Colorado. Information was collected via a mailed questionnaire. Among other findings, it was reported that an individualized approach for reading instruction was most popular; that 35% of the respondents rated the quality of materials as less than or very inadequate; that the California Achievement Test was the most frequently listed test; and, the Test of Adult Basic Education was the only standardized test listed which was designed for use with adults.

In our opinion, the research reported during this year and in the past clearly underlines the fact that very little is known about the training of college-adult reading specialists occur? Most important, how is training organized and what are the emerging issues relevant to training? Before leaving this section, we would also like to raise one other question. What current efforts are in process that assure society that future college-adult reading specialists will be trained to meet the needs of adults who will face society? To answer this question, we need a number of future studies depicting scenarios of where the present will lead. After predicting what may be, we can design intervention.

## Program Evaluations

In all, eight publications conceived with evaluating college-adult reading programs appeared. These ranged from annotated reviews and evaluations of specific courses to evaluations of particular programs.

An annotated review of 31 studies reported from 1945-1971 regarding reading program outcomes at four year colleges was presented by Tillmam (1973). Studies were identified according to: type of training, testing, and statistical procedures used in measuring pre- and post-test scores. According to Tillman, 23 or the 31 studies reviewed found a statistically significantly gain in GPA associated with reading program participation.

Mills and Hershkowitz (1973) investigated four problems that typical reading programs might have. Their approach to solving problems was a mathematical model of program planning. The problems investigated regarded (1) the fixed periods of time within which programs operate, (2) the infrequent use of data collected throughout the program to revise individual programs; (3) the use of group methods of instruction rather than individual instruction, and (4) the use of one method or one combination of methods regardless of individual student needs. A Linear Programming Model for determining an optimal combination of available methods in accordance with the student's original levels of input, expected gains, and goals was discussed in accordance with its testing and application at Drew University. It was concluded that the results, while not conclusive, indicated that this approach resulted in greater gains in speed scores than a traditional approach and that lack of substantial gains in comprehension reflect the inadequacy of instructional methods and materials used since there were no substantial gains in the control group.

Keetz (1973) evaluated the effectiveness of incorporating reading and study skills programs of instruction into a college academic course. The article deals with the effect of such instruction on the reading and study skills and the academic achievement of college students enrolled in a social foundations course. Subjects, 18 experimental and 31 control, were given an article to read and booklets of blank paper. They were instructed to use the booklets in any way they wished. After 45 minutes the articles were collected and the Ss were given 15 minutes to summarize what they had read and studied. They could refer to the booklets of scratch paper. Summaries were then graded by three experts and student GPAs were then analyzed. A one way analysis of covariance was used to analyze the data. No significant differences were found in control and experimental groups.

Driskill (1972) summarized the investigation of six Effective Reading groups within the Oklahoma City Federal Aeronautics Administration Center's reading improvement program. The program was designed to develop flexibility and to improve the level and speed of comprehension in informational reading, study reading, and scanning. Data were reported for a total of 94 adult subjects and analyzed with a t-test for correlated means. It was concluded that reading gains do accrue to non-school adults, that the reading gains were retained; and that reading skills do continue to increase.

The results of the first year's group of 57 Pre-Engineering and Management students at the General Motors Institute was provided by Patterson (1973). The article described the remedial program designed to help high school graduates who do not meet formal entrance requirements in order that they may become eligible for admission into the Engineering or Industrial Administration degree programs. Communication skills courses, designed to raise competencies in rate, comprehension, vocabulary, etc., were described. A great deal of success was claimed by the program; however, the testing procedures and materials used are either dated or of questionable reliability.

The purpose of Anderson's (1973) evaluation was to determine if the reading program at Genesee Community College was effective in meeting its goals and objectives. One hundred and seventy-six freshmen were split into 6 sections, 29 per section, and were taught by the same teachers using individualized techniques. The Cooperative Reading Test was used as a pre- and post-measure of reading. The greatest reading gains obtained were among low ability students. Low ability students who withdrew from the reading program but remained in college were the least successful both in credit accumulation and GPA.

Turner, Zais, and Gatewood (1974) attempted to determine if the ongoing reading program at Kent State University should be changed or remain the same. Date were collected from 379 undergraduates using the Diagnostic Reading Test (Upper Level). Subjects received personal academic counseling plus reading instruction. Significant quality point average differences were found for the participant group while no significant differences were found for the non-participant group.

As a body of knowledge, the program evaluations reported leave a great deal to be desired. First, the programs evaluated and the populations served are poorly described. Thus, making a decision to transport a program to another cite is nearly impossible. Second, in almost every case there appears to be no conceptual framework for the evaluation. In other words, evaluation designs appeared to be treated as experimental designs. Extant evaluation knowledge is certainly beyond this. In our opinion, the purpose of evaluation is to provide information for decision making alternatives.

Second, none of the evaluations reported could possibly lead to an understanding of how a successful program works. Third, rarely, if at all, do the evaluation studies consider cost-benefit analysis. Indeed, as budgets approach a "bare bones" standard this will be important. Finally, we would like to raise a question regarding diagnostic efficiency. Our review found no evaluation studies concerned with the degree to which programs could efficiently diagnose and prescribe instruction at the college-adult level.

**Methods and Approaches**

Eleven researchers were concerned with specific methods and approaches for teaching reading. The methods and approaches investigated ranged from the traditional to the very innovative.

Swalin and Cox (1973) examined the effects of reading instruction based upon a formal diagnositc program. Ninety-eight freshmen were selected from all incoming freshmen who scored below the 20th percentile in comprehension on the McGraw-Hill Reading Test. The experimental group (N = 49) received instruction based on analysis comprehension questions missed on the McGraw-Hill. The control group (N = 49) was given normal instruction. It was found to be possible to diagnose the reading strengths and weaknesses of high risk students through formal test procedures established before instruction is begun.

The main purpose of Tinkle's (1973) study was the problem of spacing of instruction in the teaching of functionally illiterate adults. Specifically, the objective was to determine whether it is more desirable to give 20 one hour sessions of instruction or a more intensive schedule of four hours of instruction a day for five days and to determine whether a significant deference in achievement is produced by the two schedules. The test scores of three groups of 10 male prisoners were subjected to analysis of variance. The major conclusion was that the results of massed instruction were significantly greater than spaced instruction for vocabulary retention and grade level gain.

Roussos (1973) investigated the effectiveness of the Adult Learning Center (ALC) approach in teaching adults language-arts skills, as compared to the traditional classroom method. Two separate studies were conducted. One involved 14 Mexican-Americans, while the other consisted of 62 incarcerated male felons. The tests of Adult Basic Education was employed as pre- and post-test measure. Analysis of variance was used to analyze the data. In the areas of reading vocabulary, comprehension, total reading, and spelling, no significant differences were observed between the two methods. In the areas of the mechanics of English and total language, mean grade level gains for the ALC students were found to be significantly greater than for traditionally taught students.

Whittaker's (1973) purpose was to ascertain which type of reading approach, linguistically based or a programmed approach, would be more efficient for increasing reading ability of beginning Negro freshmen and to determine if knowledge of language would affect the level of reading comprehension of speakers of non-standard Negro dialect as measured by the Nelson-Denny Reading Test. A random sample of 58 Ss was chosen from a total population of 608. During an 18 week semester, Ss received one hour of instruction followed by one half hour of application. Data analysis revealed that neither approach was superior to the other.

Diggs (1972) investigated the differential effects of the SQ3R Method, a Mechanized Approach, or a Combination Method for teaching rate, comprehension, and vocabulary to remedial college freshmen. Eighty subjects, 16 percent treatment group and one control group which received no teaching of reading, participated in the study. Pre- and post-test data were obtained with the Diagnostic and Davis Reading Test. Analysis of test scores indicated that the SQ3R Method was effective for students who need overall reading improvement. Students who needed improvement in particular areas of reading seemed to profit from a mechanized approach, providing they had experienced a systematic method of study first.

Francis, Collins, and Cassel (1973) examined methods of reading tuition, volunteering for reading courses, and the effects of these variables on examination performance. Fifty-three subjects were involved in the study. The experimental group received one hour per week of training using an EDL Controlled Reader. The control group received one hour per week of normal classroom reading instruction. Analysis of variance results indicated that volunteering for reading tuition classes bears no significant relationship to examination performance. In addition, no advantage was gained by the use of machinery. In fact, the group receiving classroom instruction improved reading speed 30% as opposed to a drop of 4.7% for the experimental group using the EDL Controlled Reader.

Godwin (1973) randomized 90 undergraduates into two experimental groups and one control group to investigate the effects that auditing compressed speech would have on reading skill. All groups were pre- and post-tested for rate in words per minute, level of comprehension, and speed of comprehension. The experimental groups then audited 20 hour long tapes accelerated from a recording speed of 3.75 inches per second (ips) to a playback speed of 7.50 ips. Tapes were audited at the rate of 2 per week for 10 weeks. Analysis of covariance applied to post-test data revealed no significant differences between groups on any variable under study. Follow up date, however, revealed significant differences on level of speed of comprehension. As for within-group performance changes, all groups registered gains from pre-tests to follow-up tests.

In an additional study of compressed speech, Gribbon (1973) evaluated auding as an aid to comprehension of literature for college students and to gain a measure of students' interests in the use of tape recordings. Twenty-four subjects were divided into three groups, eight per group, on the basis of achievement level high, medium, low. Groups either simultaneously read and listened, listened only, or read only literary works and comprehension was item tested. Data were analyzed using ANOVA and Dunnett's test. While there was some indication that listening while reading may be superior, and listening without reading inferior, to silent reading in producing comprehension, the three study methods generally appeared to be equally effective.

Beach (1972) attempted to determine: (1) the difference between college students' literary responses while reading a poem as measured by a free-association technique (both taped and written) and their responses in a group discussion, (2) the effects of completing the free-association assignment with a poem on a subsequent discussion of that poem as compared to merely reading the poem, and (3) the effects of each students' theory of literary response, attitude toward the poem or task, and conception of the discussion situation of his responses. Students were divided into three groups (12 per group) and all groups received similar treatments two weeks apart. Eight students were then interviewed and case studies reported. Conclusions reached were: (1) disucssion following the free association assignment had more interpretation and less digression than those without it. (2) subjects were consistent in assignment and discussion responses and on rereading of each poem, (3) group's attitude toward the task and/or poem and the conception of its task affected discussion responses, (4) definite stages of responses were evident in the discussions, (5) the eight case-study subjects found the free association assignments beneficial, and (6) the theoretical justifications of the case study subjects were based more on practical experience in literature classes than on theory of literary criticism.

A test of the relative efficacy of self-selection of vocabulary for learning to read was provided by Peterson (1974). Sixteen subjects were given a test of 30 paired associates in which the stimulus was a schematized Chinese character and the response was an English word. Subjects chose 15 words, the remaining 15 were from a basal reader, for which they would like to learn the Chinese equivalent. Results demonstrated that adults learn to associate Chiese words with symbols more readily when the words are of their own choosing, as opposed to when they are selected by the experimenter.

Gnewuch (1973) reported the effectiveness of a vocabulary improvement program on the vocabulary, comprehension, total reading and rate of reading of college students. The program required students to skim articles and select five words in their twilight zone to work on. Subjects consisted of 407 students who completed Reading Improvement and Study Skills classes. Program effectiveness was evaluated using pre- and post-test scores of the Nelson-Denny Reading Test. In general, it was found that the treatment was successful with Ss from Reading Improvement but not Study Skills classes. In particular, it was learned that teacher training and experience attributed to student achievement at a rate 10 times that of treatment.

Two studies investigated rate of reading. In the first, Mattern (1972) attempted to identify a superior method for accelerating reading rate without the use of mechanical assists and to identify personality characteristics which might serve as predictors of success in reading rate course work. The investigation originally included 98 college level volunteers. Forty-one dropped out of instruction, 30 completed an unstructured course in rate acceleration, and 27 completed a structured course in rate acceleation. A regression analysis indicated that reading rate pre-scores, age x years of formal education, treatment, responsibility score, responsibility x ascendency scores, and age x sex were significant contributors to explain the variability of reading rate post-socres. It was concluded that structural classes produced greater gains in reading rate and that male students benefited more from instruction than female students.

In the second study, Himelstein and Greenberg (1974) explored the effect on comprehension of a significant rate of reading increase. Twenty subjects were matched for base reading rate and comprehension levels. Materials consisted of 12 booklets of 1,000 words varying from 235-400 words per page followed by comprehension questions. The 10 students in the control condition were told to read each booklet as fast as possible and with the greatest possible comprehension. The 10 students in the experimental condition received the same directions but received a reward via a green light for each page read in less than 45 seconds or a red light for each page read in over 45 seconds. Data was analyzed using a two way analysis of variance with repeated measures. A significant difference was obtained in reading rate between control and experimental groups but no differences were found in comprehension scores. The assumption that comprehension can be manipulated as easily as reading rate was not supported by the evidence.

As with the research on evaluating program, there are many problems with the research on particular methods and approaches. To begin, the most severe criticism is that researchers tend to treat experiments on approaches and methods as if they were foot races. From our view, the method or approach that finished first should not be the central issue, rather what skills are learned and under what conditions. The efficiency of existing methods and materials and the design and delivery of more effective materials for teaching is the issue.

As might be expected, the above statements raise other questions related to methods and materials. For example we must first ask what reading tasks we can expect adults to learn with reasonable success? Just as important is the question what learner characteristics are prerequisite of reading tasks and whether these characteristics are amenable to training when adults are considered? One other question that follows is what alternative methods and materials can be imposed on adults who lack the prerequisites for learning reading tasks?

What about the timing of reading instruction? It will be remembered that only one study reported this year was concerned with the length and frequency of sessions of reading instruction.

Our knowledge of the organization of reading instruction, based on this year's research and that of the past, is close to nil. Just how should adult reading instruction be managed? What are the effective procedures for deploying staff and facilities in order to create an environment for learning to read?

Finally, what materials and procedures enable the most efficient mastery of reading skills? A significant contribution to college-adult reading would be a consumer report for materials and approaches.

### Variables Affecting Programs, Methods, and Performance

A number of studies investigating variables which affect performance in a reading program were reported. The topics investigated ranged from a model of study behavior to extent to which technical vocabulary contributes to achievement. Two studies (Gwaltney & Robinson, 1973; Wark et al. 1973) are important because they attempt to explain diurnal change, a variable contributing to achievement and "test panic" as a variable debilitating to performance.

In a study involving 69 undergraduates, Gwaltney and Robinson (1973) attempted to determine the effect of time of day (8:30 a.m. or 12:30 p.m.) on a 16 week reading improvement course in raising reading achievement scores. Data were analyzed using analysis of covariance and the Duncan Multiple Range Test. The authors reported that the course was effective in raising post-test reading achievement scores. It was also found that the course was most effective for students enrolled in a 12:30 p.m. section. Although this study ignored the causative factors related to achievement, it is important. It opens the door to the investigation of diurnal change on the part of the student and subsequent achievement. This study should be replicated using an appropriate aptitude-by-design.

Wark et al. (1973) attempted to produce information relevant to the theoretical understanding of heart rate and the reading process or to the possible treatment of test panic problems. Instruments used included the McGraw Hill Reading Eye Series and the Text Anxiety Questionnaire (TAQ). Subjects were made as comfortable as possible in an isolated, sound-dampedned experimental room and were tested individually. Three experiments are reported. Experiment I, was concerned with the effects of questions on heart rate. Experiment II concentrated on the relationship between text anxiety and heart rate. The purpose of Experiment III was to explore the heart rate pattern of students suffering from test anxiety. The data were analyzed using mean heart rate comparisons. It was reported that reading to answer questions seems to involve a systematic shutting-out (test panic students may be rejecting parts of the text is front of them) and that test panic students may answer questions in terms of previous or irrelevant knowledge. Undoubtedly, this research raises some interesting questions to be answered in the future. However, future researchers might note that no controls were cited for the type of material being read (Was it scary or bland?). Moreover, strong measures of comprehension should be included in future research.

Van Zoost and Jackson (1974) reported an extension of the use of self-administered reinforcement for study habits by getting Ss to explicitly reinforce their self-monitoring of study activities. Forty-three university students paid an initial $10 with the knowledge that they could get $7 back for exhibiting appropriate study behaviors. Subjects viewed video tapes on study skills and attended lectures which cited examples of appropriate and inappropriate study behaviors. Ss were then divided into three groups, two of which monitored either their study behavior or library activities and third serving as a control. Results indicated significant gains in self reported study habits for all conditions at both post treatment and six-month follow-ups. Implications point to the feasibility of training students in self management skills that subsume and extend self instructional practices, along with the suggesting that manipulating pay-off conditions might be a worthwhile area of study. Finally, the article presents a good review of the literature and speculates on where subsequent research should be directed.

Agin (1973) attempted to determine whether there were any differences between students who either volunteered for or had reading improvement classes posed on them at the college level. Variables of major concern included differences in personal background characteristics, study habits, study attitudes, and interpersonal values. A two-way multivariate analysis was used to analyze data. It was concluded that the selected background characteristics of the community college reading student indicated relatively small differences between those students enrolled in an involuntary reading class and those enrolled in a voluntary reading class.

McClellan and McClellan (1973) studied the relationship between reading achievement and success in freshman biology in an attempt to alleviate some of the academic difficulties encountered by non-science college students enrolled in a general education course in biology. Sixty-five undergraduates were given the California Reading Test, the Diagnostic Reading Test, and the Nelson-Denny Reading Test. The degree of relationship between each of the individual reading scores and the grades earned by students was determined. It was found that a background of scientific terminology and mathematics terminology is of major importance to success in a general college biology course.

Solis (1973) investigated the factors which relate to the achievement of reading gains for a junior college population. Data were gathered on 500 junior college students. A stepwise routine of multiple regression was used to determine relevant predictors of reading gain. It was concluded that: (1) students who drop out of reading programs have poorer study orientation rather than poorer academic skills, and (2) that duration of instruction is significantly correlated with improvement for students achieving developmentally, but is not a determining factor for some "low achieving" students.

Birdwell and Gabbert (1973) proposed a hierarchical model for study concentration behavior. Information was colleged from 659 students at the University of Calgary during a 2 year period. Such instruments as behavioral rating scales, checklists, available tests, and student accounts of problems were employed; however, no examples were given other than two very successful case studies. Thus, the use of the model for generating useful questions about study behavior appears to be very limited.

## Reading and Atypical Adults

Eight pieces of research dealing with reading and atypical adults appeared during the last year. The atypical populations studied were mainly adults with poor visual and auditory abilities, schizophrenics, mental retardates, and the learning disabled.

Sloan, Hable, and Feiock (1973) reported additional data on the acuity luminance functions of patients with active and inactive atrophic macular lesions and described a simple clinical test to determine whether high illumination procedures are significant in a patient's reading vision. They found that changes in acuity with illumination, studied in patients with macular disease, showed that some patients required extremely high illumination to attain maximal acuity. This effect was observed primarily in eyes with active edema or hemorrhage at the macula. Patients with various forms of macular disease in which high illumination was required produced a significant increase in acuity and in the ability to read continuous text. When a high intensity lamp was used, a much weaker magnification was required than with moderate illumination.

Kazmierski (1973) investigated the cloze procedure and two modifications of this technique as an instructional mediating device to enhance the grammatic and semantic meaning of a prose passage for deaf students. Sixty students from a post secondary technical institute, hearing ease of 60 db or greater, mean achievement level of 8.6 years, and average age of 19.8 years, were used as subjects. Major findings were that the practice of completing cloze exercises did not increase general reading comprehension skill and that average deaf readers did better than poor deaf readers on cloze exercises.

The learning patterns of a heterogeneous group of 46 severely disabled subjects ages 8 to 18 in a standardized tutorial program was described by Camp (1973). Descriptive information was presented regarding individual differences in learning and retention. It was concluded that individual differences in learning rate may account for a large share of individual differences in reading achievement even among a group of severely retarded readers. Likewise, it was learned that a great deal can be gained by simply increasing the amount of repetition of various responses. The results of this study further suggest that future research on learning disabilities should include investigations of individual differences in the degree to which reinforcement contributes to habit.

The language behavior of schizophrenics was reported in two studies by Blaney (1974). A major purpose was to test Chapman's strongest meaning hypothesis. Subjects consisted of 25 normal individuals (control group), 22 hospitalized control subjects (diagnosed as anxiety neurosis, depressive neurosis, or depressive psychosis), and 71 hospitalized schizophrenics. Instruments used included: (1) 21 structurally ambiguous phrases drawn from the work of Cairns (1970); (2) the Chapman Lexical Ambiguity Test; (3) 44 cloze passages, each 17 words in length taken from magazines with the middle word deleted; and (4) the Kent-Rosanoff Word Association List. Data were collected which allowed for within-schizophrenic comparisions for length of hospitalization, degree of floridness, paranoid status, and premorbid status. The Chapman hypothesis that schizophrenics tend to respond to verbal material in context in a way appropriate if no context were available was supported only for disorganized schizophrenics and only when the ambiguos element being considered was lexical. Salzinger's hypothesis that schizophrenic responses are inordinately influenced by immediate context was supported, regarding semantic constraints.

Changes in IQ, academic achievement, and community adjustment of 50 previously institutionalized educatably retarded adults were the concerns of Rosen, Floor and Baxter (1974). The subjects studied have been living in the community for at least six months. The Wechsler Adult Intelligence Scale and the Metropolitan Achievement Test were given shortly before the individuals were discharged and retesting, using the same measures, was conducted at the time of this study. A community adjustment rating scale was also administered. It was found that expertise and stimulation regarding independent living was not reflected in an IQ or academic levels and the ability to function effectively in the community. In addition, the authors speculated that it might be more fruitful to investigate personality and emotional variables, rather than cognitive-intellectual factors as being central to community living. This article is significant in that it is the first reported study since 1956 that deals with the effect of community living and experience upon intellectual and academic functioning for previously institutionalized educatably retarded adults.

Oller and Tullius (1973) wished to determine the rationale for the place of reading in an English as a Second Language Program at the college or university level by examining the English reading skills of non-native and native speakers and discovering how non-native spearkers from differing backgrounds compare with each other in ability to handle printed English. Analyzing the results of eye movement photography techniques, it was found that the average number of regressions for non-native subjects who read college level material is not significantly different from the college level native speakers norm. The non-native average duration of eye fixations, however, was found to be significantly longer than the average fixation for native speakers. The research also brought out the fact that reading difficulties of non-native speakers are substantially different in type as well as in number from the reading problems of natives.

Sloan and Habel (1973) obtained comparative measures of reading speed for large and standard print texts when optical reading aids suitable for size were used. Twenty-two partially sighted readers ranging from grades 5–12 and adults read aloud sample passages of 100 words from four texts in large and small print size. The time required by the subjects to read the passages was recorded. Average rate comparisons indicated that readers who have learned to read may be able to use standard print texts if they can be provided with adequate optical magnification. An interesting follow-up to this study would be to determine, by actual trial, at what levels of visual impairment the use of standard print is both feasible and preferred.

Finally, Adams, Lewis, and Besozzi (1973) evaluated the effects of reducing reading rate by controlling for passage meaning and phonetic transitions upon stuttering frequencies. Eighteen subjects, 16 males and 2 females, ranging in age from 15 to 30 read a prose passage of 120 words which was either typed on a single sheet of paper or on 3 x 5 cards one word per card. The conditions were presented in counter-balanced order with approximately five minutes between conditions. Comprehension was checked by asking subjects to summarize what they had read. After comparing frequencies of stuttering and reading times across conditions, it was found that when stutterers reduced their reading rates, they decreased their frequency of stuttering.

Before moving on, we would simply like to point out that the reading behavior of atypical adults is rarely studied. No doubt, this is the result of inadequate funding for research and development. On the other hand, it may well be the result of the lack of interest reading specialists have in adults in general and atypical adults iparticular. A challenge to the profession, then, is to mount a concentrated effort toward identifying and meeting the reading needs of atypical adult populations.

## Reading and Testing

Test taking skills have been a primary concern to educators for a number of years. Langer et al. (1973) reported the results of two experiments designed to determine if test-wiseness does exist and if it can be taught. In their first study, college subjects were assigned to one of four groups. From a pool of 10 test-wiseness cues, Group 1 was instructed on all 10 cues, Group 2 was instructed on five of the cues, Group 3 was instructed on the remaining five cues, and Group 4 was a control. The significant ANOVA results for gain scores on test taking ability revealed that test-wiseness can be taught. The amount of gain was found to be related to the amount of information given.

Following the above investigation, 78 Ss were assigned to one of four groups to ascertain the best method of teaching the 10 test-wiseness cues. Group 1 was a control, Group 2 received a lecture, Group 3 completed programmed instruction, and Group 4 read about the 10 cues. The ANOVA results suggested that no one method is best for teaching test-wiseness cues. It should also be noted that one severe limitation of the studies reported is the fact that transfer of training on test-wiseness cues was not demonstrated on actual test taking performance. In other words, one's knowledge of test-wiseness may be increased without increased performance on test taking.

In a different kind of study on test taking, Taylor and Graham (1974) attempted to design an equivalent form of the MMPI by reducing its readability level. A team of psychologists first judged what items could be rewritten. This step was followed by changing 431 of the 550 items, i.e., engaged in petty thievery" to "took a few small things which were not mine." To determine equivalency of forms, 68 undergraduates took the standard and revised forms during two sessions. Half the group took the revised form first, the other half taking the standard form first. Correlational analysis indicated that the new form was equivalent to the standard form. In addition an analysis of pairs of test profiles revealed that the two forms were diagnostically comparable. It was also interesting to note that the majority of Ss preferred the new form because, in their opinion, the items were easier to understand.

McDonald and Moorman (1974) gave a description of the Minimal Reading High School Proficiency Test developed as a criterion measure for the Phoenix Union High School System in Phoenix, Arizona. Skill areas measured by the test are those which were identified by reading specialists in the district as those necessary for an adult to function in our technological society. . . . A correlation of .89 between the test and the Davis Reading Test was reported.

Mehryan (1973) investigated the applicability of a western paper and pencil group test of perceptual ability to a sample of Iranian workers in adult literacy classes just beginning to learn the basic skills of reading and writing and explored the possibility of using such perceptual tasks as predictors of literacy achievement. Subjects, all male, ranged between the ages of 9 and 53. Tests used in the study included the Tool

Matching Scale of the General Aptitude Test Battery (GATB) and experimental measures of dictation, word recognition, numerical reasoning, arithmetic, practical information, and scales and measures. Based on low correlations among scores, the author concluded that further exploration of paper and pencil tests as predictors of literacy achievement is warranted. We take issue with this conclusion. It might have been more appropriate to suggest that specific predictors of literacy achievement should be developed for populations in developing countries.

## Sociology of Reading

### Literacy

Several studies focused on literacy at the national and international level. For example, at the international level an attempt was made by Herzog (1973) to discover the changes which occur in the pattern of variables related to literacy as one moves from communities of lower to higher economic development. One thousand three hundred and seven heads of households were divided into four groups according to the level of community economic development and interviewed. Information was collected regarding amount of education, innovative behavior, farming practices, socioeconomic status, mass media exposure, opinion leadership, social contact, and modern attitudes. The data collected were analyzed using factor analysis and analysis of variance. It was concluded that community economic level is positively related to community literacy level. Unfortunately, the only measure used to determine literacy was the score on a 50 word passage read aloud. No reliability was reported for this "literacy" test. However, it was described as coming from an adult literacy primer used in Minas Gerais, Brazil. Although some of the variables listed required some mathematical knowledge and skill, this was not listed in the definition of literacy.

In England, it has been estimated that there are as many as two million adult illiterates. Moreover, it has also been suggested that the reading levels of 15-year-olds are declining. The purpose of the Provision for Adult Literacy Study in England was to list adult literacy programs and to collect data indicating the major directions of the programs. Urch (1973) surveyed 384 programs providing adult literacy instruction in England. Among his findings were the following: (1) over the past 20 years, adult literacy programs have increased from 10 to over 230; (2) during 1972 over 5,000 adults received instruction; (3)

adult literacy class sizes are generally 5–10 students; (4) the majority of instructional materials used are home produced; and (5) the training of teachers for adults is uncommon and usually restricted to a few evening classes on teaching problems.

Finally, at the state level Shami and Hershkowitz (1974) presented the findings of a goals validation and needs assessment for the State of Maryland. Information was collected from 11,015 respondents from an original randomly sampled population of 23,990. A questionnaire employing a five point rating scale was used to collect information regarding 37 product goals of education. Data revealed that the goal "mastery of reading skills" was consistently rated either first or second as the most important of all educational goals. This finding held true across all public groups at the state and local levels. In addition, questions related to the accountability of progress in reading and to its level of attainment are raised.

Before moving on, we would simply like to add that little is known about literacy levels in developed and developing nations. More important, it is difficult to document significant changes in literacy levels over the past 50 years. Although National Assessment of Educational Progress will eventually provide data to answer some of our questions concerning American literacy, what is sorely needed now is a study of test data obtained and held by school systems over the past 50 years.

More practically speaking, a well designed study describing the literacy demands of schooling and society for adults is yet to appear. Just as important is information leading to an understanding of what an adult must know in order to make worthwhile use of written material.

**Use of Media**

Again, a number of studies exploring the uses of media, the effects of media, and so on appeared in the literature. In the main, research on media has not been viewed as reading research by the researcher or his audience. Indeed, this is unfortunate because improved methodology and significant research questions are left undiscovered by the researcher and reading specialist.

Dajani (1973) analyzed the relationships among media exposure, mobility, literacy, and political participation. One hundred and forty-four Lebanese respondents from either Moslem or Chrisitan religious groups were interviewed. A 2 x 3 x 3 x 3 (religious by community by socio-economic by age groups) ANOVA design was employed, using percentage comparisons. It was found that Lebanese people have a relatively high mobility (37% of the total sample own at least one car and 15% travel to foreign countries) and that socioeconomic prejudice is more apparent than religious prejudice.

Data used in this study were originally gathered for a different project and do not provide all of the information needed to successfully answer the questions reaised initially.

Thomson (1972) wanted to determine whether newsmen resolve stress by changing their beliefs or by other means when their work forces counter-attitudinal information upon them in regard to the differential effects of focus on a counter attitudinal attack and an experimentally induced commitment to discuss a belief position. Instruments included the beginning of an interpretive news story, defined as an article written to inform the public on a particular issue; and, a 15 point scale to measure agreement or disagreement with each of four statements. Using analysis of variance and the Duncan Multiple range test, it was found that belief change can be either facilitated or hindered, depending in part on the focus of the contrary communique to which one is exposed.

Wright (1974) discussed issues in studying media effects and presented procedural development for measuring and analyzing communications response. One hundred and sixty housewives from mid 20s to mid 50s were assigned to broadcast media or print media groups with either high content (told prior to the experiment that they would be asked for a content evaluation) or low content no such information) involvement regarding either a print or broadcast advertisement. Attitudinal scales, thought listing, and free response to the arguments presented were used to collect data. A 2 x 2 cross-factorial design (2 media, print and broadcast and 2 levels of content processing involvement) was used to analyze the data. It was found that print and broadcast media differ substantially regarding the extent and nature of the evaluative responses which they elicit. Variations in the receiver's involvement with specific content appeared to have an important influence on their responses. This article is significant in that very few, if any, studies of this type have preceded this one.

Cole and Shaw (1974) reported the findings of a study to determine whether substituting a "stronger" attributive verb for the most often used "said" and/or adding "body language" statements to news stories really makes any difference to readers. One hundred and fifty-five subjects read three versions of the same story at their normal reading speed and then recorded their impressions of both the stories and the persons quoted in them. Ss were asked to proceed naturally without overly reflecting upon their judgments. A seven point semantic differntial scale was used to record subjects' impressions. A one way analysis of variance indicated that more active attributive verbs, especially with body language statements, caused Ss to view entire news stories with suspicion, especially Ss who reported being frequent readers of newspaper news. While "body language" statements may clearly brighten a story they may also decrease its believability and objectivity. At the same time, more powerful verbs and body language statements led subjects to judge the person quoted in the stories as more powerful or active. It seemed clear that through choice of language, the reporter has the power to influence reader interpretation of events, issues, and the persons he writes about. More important, this article brings evidence to bear on what previously was mainly conjecture.

Riley (1973) explored the issue involving "free press" prerogative to cover a crime vs. the ability of the accused to get a fair trial. He wished to determine if: (1) a change of venue or venire significantly enhances a suspects chances for a fair trial; (2) if a greater proportion of respondents would be aware of the crime, would prejudge the suspect, and would know the suspects identity in the city where the crime occurred than in another city; and (3) the mean number of correct facts of the crime, correct attributes of the suspect, incorrect "facts" of the crime, and incorrect or fabricated attributes of the suspect included in respondents replies to open ended survey questions would be greater in the city where the crime occurred. A telephone survey was conducted with 183 potential jurors "randomly" drawn from voter registration roles. Data analysis revealed: (1) that those potential jurors who reported no prior courtroom experience have a tendency to prejudge more often than those with prior experience, (2) that there is no relationship between age and prejudgment, (3) that men are less likely to prejudge than women, (4) that occupation and education do not yield significant differences with prejudgment, (5) that respondents who did not or could not mention any correct facts or attributes showed the smallest incident of prejudgment, (6) that respondents who offered incorrect facts or fabricated attributes clearly showed a higher propensity to prejudge. The more incorrect the information the more likely to prejudge, and (7) that judges and defense attorneys should attempt to determine what veniremen already know about the crime and suspect.

McClengham's (1973) research objective was to assess the influence of newspaper editorial endorsements on voting behavior in local elections held in seven Texas cities between 1960 and 1970. Ten Texas newspapers from large Texas cities (Dallas, Houston, Fort Worth, El Paso, Lubbock, San Antonio, and Austin) were analyzed using percentage comparisons to determine the relationship between the number of endorsements candidates received and the number of victories between 1960-70. The generalization that the press was a major influence in the affairs of local government was confirmed. It was determined that 88% of newspaper endorsed candidates won their respective elections.

Wilson's (1974) efforts were directed toward determining if there is a related differential processing by the audience of the same news message presented by different media using immediate loss of information as criteria. Four hundred and eighteen subjects, randomly assigned to media, interest, and length of treatments were presented with two news stories, ficticious but plausible, one considered to be interesting and the other dull. There were three versions of each story varying by length. The stories were prepared on audio or video tape and in newsclipping form to simulate real conditions. After exposure to a treatment, Ss completed a neutral task, filled out a seven point interest rating scale, and then wrote down all of the story they could freely recall. Analysis of variance indicated that mean loss of information was greatest with radio (audio tape) 79.92%; for TV (video tape) 79.12%; and for newspapers 72.83%, respectively. This finding suggests that it is impressions retained from a newspaper item, rather than its content, that are important.

Shaw (1973) provided a cautionary comment on the findings of the Roper Research Associates that electronic news outlets are more believeable than print media. A questionnaire, which focused on the meaning extension of the term "press" and the connotation of "press freedom", was sent out to a random sample of 942 students. Six hundred and fifty-six returned the questionnaire. Using percentage comparisons, it was determined that media use and credibility of media were related. This suggests that the sequence in which they occur (electronic sources before print sources) on the Roper Questionnaire may distort their credibility.

Sharon (1974) examined the newspaper reading habits of low income segments of the general population. He was particularly interested in the newspaper reading habits of blacks. However, four nonmutually exclusive subsamples, blacks, whites, low-income blacks and low-income whites, were examined. Data were taken from a national probability sample of 5,067 adults 16 years of age or older. Information was gathered by interview techniques. Readers were classified as readers if they could read the headlines of an English language newspaper. The results reported by Sharon were: (1) the proportion of white readers is greater than the proportion of black readers for every kind of reading material, (2) racial differences in newspaper reading is larger than in any other form of reading, (3) newspapers do not reach a very large percentage of blacks, especially poor blacks, and (4) newspaper sections, i.e., editorials, women's, society page, and regular ads, are read less frequently by blacks than whites. The author speculated that newspapers do not respond to blacks' needs and concerns to the same extent as other printed media.

In their study, Siller and Jones (1973) attempted to demonstrate that audience segments can be identified for the different content sections within a newspaper; that these audiences overlap, and that the overlap must be accounted for in correctly assessing advertising coverage. A self-administered, aided-recall questionnaire, which included an abridged, miniaturized reproduction of Thursdays newspaper, was completed on Friday for a period of six months by 402 respondents. Mean comparisons of segmented audience measures were used to analyze the data. The findings supported the prediction that segmented audience exposure measures based on sections within a newspaper are better than non-segmented measures. Similarly, the contention that the cummulative net audience of sports, business, and women's sections is lower but more meaningful than that of the whole newspaper was upheld.

## Media Credibility

Only two studies explored media and its credibility. In the first, Ryan (1973) examined the relationship between news content, geographic origin and perceived credibility. Seventy-three adults in three southern Illinois communities were given a 36 item questionnaire. Each item was followed by a "forced choice" scale in which the respondent circled either television or newspaper coverage of a news event as being more believable. A three factor R solution analysis (news content, i.e., public affairs, science, and student demonstration with each category divided into three subcategories concerned with geographic origins, i.e., state, national, and international) was employed. Findings led the researcher to conclude that: (1) news of student demonstrations clustered into one content-pure factor that cut across all geographical areas, (2) television is more believable for news of student demonstrations due to the perceived action of the event, (3) statements relating to state public affairs and statements relating to science did not cluster into one factor; but, newspapers are more credible for statements relating to public affairs and science than television. This seems to be a function of availability of coverage. And (4) that statements of national and international public affairs cluster into one factor; but, there is no difference in the credibility of television vs. newspaper coverage. This study is important because it represents an effort to explain the complex relationship among news content, geographic origin, and credibility.

In a second study, Meyer (1973) looked for evidence to determine whether a bias on the part of the press or some other specific pattern of bias could be identified as a principal cause of low believability. Nine hundred and thirty-one adults from an original sample of 1,125 from the Detroit area were interviewed. Each respondent was asked to evaluate newspaper coverage of specific groups of people. Respondents were asked if some groups were treated too favorably, about right, or not favorably enough. A factor analysis was used to interpret the data. It was found that lack of awareness of everyday people is the cuprit contributing to the credibility problem. An interpretation of the data also strongly suggested that how a newspaper treats the everyday person is more likely to cause dissatisfaction than how it treats a counterculture or authorities.

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# A NATIONAL SURVEY OF LEARNING AND STUDY SKILLS PROGRAMS

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In the past decade, a proliferation of reading and study skills programs has resulted in a national movement characterized primarily by its lack of either continuity or consistency. With this in mind, a national survey of college reading and study skills programs and centers was conducted in the fall of 1974 in order to substantiate or verify the learning center concept with on-going programs across the nation. By securing descriptive information about these diverse programs, the authors were able to discern trends regarding the staff, budget, administration, and function of learning centers in the nation's colleges and universities.

For the purposes of the report, the term "learning center" will be used as a generic description for Learning Assistance Centers, Learning Resource Centers, Reading-Writing Labs, Tutorial Centers, Study Skills Centers or any of a variety of names of programs or centers which provide instruction in reading, study skills, or general academic assistance to enable students to learn more in less time with greater ease and confidence.

A comprehensive survey like this had not been done before. In fact, in searching ERIC and the University of Minnesota retrieval system, the authors found no previous nationwide surveys of learning centers even though Sweiger (1972) had ended the report of her community college survey with the recommendation that because reading teachers want to know what others in their field are doing, surveys should be repeated on a regular basis.

Reading surveys of administrative opinions (Aukerman, 1964), learning environments (Newman, 1971), evaluations (Fairbanks, 1974; Newman, 1971), professional and paraprofessional training and qualifications (Thrist, 1972; Maxwell, 1970), are evidenced in the literature. Lowe (1969) cites 49 in his review of surveys conducted from 1929-1966; since then, there have been several state-wide surveys of reading programs (Booth, 1972; Lowe & Stefurak, 1969-1970). In addition, national surveys of reading programs occur frequently (Buffone, 1965; Otto & Ford, 1967; Martin, 1970; Schantz, 1974; Sweiger, 1972). At the national level, audio-visual instructional programs and library resources have been surveyed (Foreman, 1968; Peterson, 1974; Raines, 1973; Shores & Fuscaro, 1970).

Surveys of study skills programs are rare; national surveys of the learning center, as defined above, are almost non-existent. Devirian's 1974 California survey, which served as a pilot for this national survey, found significant differences between programs in two- and four-year institutions. In an unpublished paper, Whetstone (1970) compiled the results of a survey of western college reading and study skills programs, and Fairbanks and Snozek (1973) circulated a checklist of current practices of college reading programs amoung 200 College Reading Association members. As early as 1954, Blake conducted a nationwide survey of study skills practices in institutions of higher learning.

## Procedure

The initial survey instrument consisted of 70 questions on administration, budget, staffing, services, facilities, and materials. On October 1, 1974, the survey questionnaire was mailed to the 3,389 campuses of all 2,783 accredited colleges and universities listed in the 1972-73 and 1973-74 Educational Director. Of the surveys mailed, 1258 (38%) were completed and returned. All surveys were processed by a Control Data Corporation 3150 computer, using a program from the statistical package for the social sciences.

All the accumulated data were categorized by region, institutional level, student-body size, and type (liberal arts, professional, and technical) and centers were further categorized by program name. These data were then cross-tabulated by all questions asked on the survey.

Because of the large amount of data accumulated, space necessitates that this paper focus primarily on the results of variables cross-tabulated by level of institution, that is, two-year colleges, four-year colleges offering only undergraduate instruction, and institutions offering undergraduate and/or graduate instruction.

## Results

Of all colleges responding to the survey, 61% (759) reported having a learning study skills program; an additional 9.3% (115) indicated plans to develop a learning center within the next two years. When cross-tabulated by level of institution, two-year, four-year, or post-graduate, significant differences were found: 78% of all two-year colleges reported having centers, compared with 57% of post-graduate institutions and 43% of four-year colleges. The reason for the higher percent of centers in post-graduate institutions than four-year colleges is probably a result of size and resources available; a similar correlation exists between center existence and population of institution.

The fact that learning centers are a relatively recent development in the nation's colleges was well documented by the results of the survey. It was surprising to find that 57% of all centers became operational after 1970, and a mere 10% existed before 1960. It appears this phenomenal growth rate may have reached a peak during the period between 1970-72, with 259 centers or 34% of all centers beginning operations during that period. After that period, the rate diminishes with 23% of all centers beginning between 1972-1974.

When cross-tabulated by level of institution, other trends become apparent in the growth rate of learning centers. An unexpectedly higher percentage of two-year colleges established learning centers between 1965 and 1972; before and after this period the activity in two-year colleges was about as expected. Institutions offering post-graduate instruction, reported the highest percentage of learning centers in existence before 1960; 61% of all centers before that date were in post-graduate institutions, probably a result of reading programs in Education departments. An other interesting statistics is the high number (56) of centers begun in four-year colleges in 1972-74, which might indicate growth in an area which had previously lagged behind.

The administration of learning centers continues to be a subject of concern if not confusion. To date, no established pattern of adminstrative responsibility has emerged, partially because learning centers are so new to the academic scene that they do not fit nicely into administrative charts of organization and partially because each campus assigns different significance and breadth to their functions. This survey made it possible to discern general administrative trends regarding level of institution. One can conclude that learning centers in two-year colleges tend to be administered more frequently by English departments; whereas centers in four-year colleges and universities tend to be administered by Departments of Education or Counseling. As compared with 12% in two-year colleges, 54% of all centers in post-graduate institutions are administered by Counseling or Education.

The overall compilation indicates 60% of all centers administer their own departments; however, no significant correlation exists between independent departments and level of institution. There was evidence indicating a trend toward greater administrative diversity. By comparing question number 7, "The department which originally administered program center was . . . " and question number 8, "The department which presently admiisters program center is . . . ," one finds the frequencies significantly smaller in every category in number 8 except "other" which increased by 9%. This signifies first, more departmental autonomy for learning centers and second, less uniformity in administrative patterns, even though English departments still administer the highest percentage (23%) of such centers.

The general administrative tendencies of the learning center in two-and four-year colleges was paralleled by the cross-tabulation of data and staffing. There was a remarkably high correlation of centers in two-year colleges with staff having degrees in English; conversely, four-year and post-graduate institutions tend to have staff with degrees in educational psychology and counseling. This general trend continued when the data was cross-tabulated by size of institution: the smaller the college the more likely its center would be administered by an English department and have staff with English degrees; the larger the institution the more likely it would have a center administered by education or counseling and have a staff with degrees in those areas. It should be noted, however, that of all centers responding, 52% indicated having some staff with degrees in English and 58.5% reported having some staff with degrees in reading.

Although it would be impossible to report all the findings of the survey, a few items of particular interest to learning center practitioners are worth noting. The issue of credit, especially for reading and study skills courses, remains a vital issue on many campuses. Of all centers responding, 65% offer some form of credit; 25% show that **all** clients using the center receive credit, while 35% indicated **no** clients receive credit. As expected, a much higher percentage of two-year colleges offer credit for such courses than four-year colleges. Study skills classes are offered in 79% of all centers, with 40% offering these classes for credit. Once again, two-year colleges exhibit a much higher frequency of centers offering credit for study skills courses. Only 12% of all respondents indicated the center holds no classes, a surprising statistic in view of the individualized philosophy subscribed to by most centers. Subsequent surveys would be most valuable in determining if this statistic changes.

## Implications

The fact that significant differences exist between centers in two- and four-year colleges is not so startling as the underlying message of the data accumulated on staffing, budgets, administration, and college credit. It is clear that learning centers are not only more numerous, have more staff and operate with larger budgets on the two-year campus, but are essentially a different genera of centers, having closer ties to the academic community instead of acting as support services under departments of education or counseling. The need for subsequent surveys to observe any change in this area is most pronounced.

In terms of absolute numbers, it appears that centers in four-year colleges are catching up to those in two-year colleges; further comparative analysis is necessary to determine if this growth will continue. There is also need for more evaluative surveys to determine what type of administrative pattern is most beneficial and under what conditions departmental status is advantageous or desirable. Further research could document what types of learning centers are most successful, what functions they best perform, and what effect they have had on individualized learning or higher education as a whole.

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# IMPROVING COLLEGE READING AND STUDY PROGRAMS BY LOCATING AND CRITIQUEING RESEARCH

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## Locating Information through the ERIC System

When a teacher or an administrator has a question and thinks the information in the ERIC system can help in finding the answer, the first step is to state the question in as precise terms as possible. For example, the question, "What is the best way to teach reading to college students?" is too broad and might be rephrased to include a specific age or grade level, a particular reading approach, and/or a particular organizational plan: "What study skills programs for college freshman have been successful?" The essential components of the question then become the descriptors or lead the user to the correct descriptors to use.

The above question would generate the subject terms "study skills," "remedial reading programs," and "freshman college." However, checking in the *Thesaurus* one would discover that "study skills" is an ERIC descriptor, "Remedial Reading Programs" is an authentic descriptor term and the correct descriptor for "Freshman in College" is "Junior College Freshman."

After determining the subject terms most closely related to the problem, the user's next step is to look under those descriptors in RIE or the *ERIC Educational Documents Index*. One most interested in relatively recent information, would begin with the most recent issues of RIE. By listing all the Ed numbers for the most appropriate documents under the selected descriptors and noting the ED numbers that appear under more than one of the selected descriptors, the user can identify those documents most likely to yeild pertinent information. The procedure can be followed for each monthly RIE which is not yet contained in a cumulative volume. If one wishes to search farther back into the system, he can use the 1973, or earlier, annual cumulative indexes for this purpose.

The user's next step is to refer to the resumé sections in monthly RIEs that contain the document abstracts corresponding to the ED numbers recorded. By reading each of the brief abstracts, he can quickly determine which documents are most related to the problem and should be read in their entirety.

A user who has identified all of the information available on the topic in RIE should then consult *Current Index to Journels In Education (CIJE)* for a listing of references from educational journals relevant to the topic. Using the same descriptor terms to search the monthly, semi-annual, and annual compilations, one will obtain a list of EJ numbers. (The procedure for searching CIJE is the same as that for RIE.)

There is no need to refer back to each monthly issue of CIJE already contained in a cumulative issue since in contrast to RIE, cumulative volumes of CIJE contain a Main Entry section. Each entry lists complete title, author, source (journal title, volume number, date, page numbers), assigned descriptor terms, and – particularly in cases in which the content is not clear from the title – a brief annotation.

By using the essential reference information, the user can find the selected journal articles and can read them in the library or obtain copies from the publisher. Since the contents of journals are copyrighted, copies of articles are not available through the ERIC system.

The aforementioned process should help the user find those articles and documents most pertinent to his or her needs.

Summary:

(1) State the question as accurately and precisely as possible.

(2) Consult the *Eric Thesaurus* for descriptors related the the question.

(3) Look under the selected descriptors in the subject index of *Research in Education* or *ERIC Educational Documents Index*.

(4) List those documents that are related to the question, noting those that occur under two or more descriptors (these will probably relate most directly to the question).

(5) Read the abstract of each document to determine its significance to the question. (Entire documents may be read on the microfiche reader or ordered from EDRS.)

(6) Using the same dexcriptor terms, consult the subject index of CIJE. (Relevant journal articles may be read at the library.)

(7) If further information is needed, contact the ERIC Clearinghouse on Reading and Communication Skills or other ERIC Clearinghouses, or conduct a computer search of the ERIC system through one of more than 125 ERIC computer search facilities.

## Critiqueing Reading and Study Programs

A thorough and precise reivew of a Junior College Reading Program provides information which may be used to determine the usefulness and applicability of the various aspects of the program to other situations. Insufficient or vague information misleads the reader into believing that positive results will be achieved by utilizing "review program" techniques in an "adaptation program".

The critical reader will become adept at reading program reviews to advantage by raising questions regarding the following categories: goals and objectives, population, staff, program, cost, facilities, outreach and evaluation.

### Goals and Objectives

A clear goal statement should immediately inform the reader of the major aims of the program. Specific objectives serve to clarify the goal. The reader is now able to determine whether or not the program is of adaptation interest. Further, by referring back to the stated goals and objectives as reading progresses, the reader will be able to evaluate the extent to which the various aspects of the program are congruent with the stated goals.

### Population

The nature of the population served should be described. In addition to knowing the number of students served, the reader needs a summary data profile including age range, sex, socio-economic background, scholastic achievement levels, and attitudinal information.

### Staff

The roles and responsibilities of the staff members should be clearly delineated. Who manages, coordinates, teaches, advises, researches, evaluates? The reader must determine if similar staff capabilities are available for an adaptation program.

### Program

Since the approach to diagnosis is a key factor in the applicability of the program, the diagnostic procedure should be thoroughly explained. The reader must be able to see how the diagnosis relates to program goals. Is the diagnosis skill oriented? Is the "whole student" considered? Are the tools valid?

A description of the materials utilized will give the reader clues to the quality of the program. Are the materials appropriate both to the population and the program goals?

What happens to the student in the program? Is one basic methodology utilized or are there varied learning opportunities? Does the student attend lectures, participate in small groups, work independently, receive tutoring?

### Cost

Information regarding cost of the program is vital to the reader. What is the cost of the program? How is it funded?

### Facilities

The description of the facilities should include amount of space, organization, and usage. Where do the students work? Where do staff plan and teach? Where and how are materials stored and displayed? Where is the equipment placed?

### Outreach

The goals of most reading programs speak to the success of the student in the total college milieu. What type of dialogue and cooperative actions exist between the reading program staff and staff of the other programs of the college?

### Evaluation

An effective program includes a thorough evaluation procedure which leads to program improvement. How is data collected, evauated, and disseminated?

## Conclusion

By considering each of the areas presented here, the reader will be able to make a thoughtful determination of the applicability of the review program to a potential adaptation program.

## Evaluation Emperical Research

The distinguishing feature of experimental research is control. The two methods for controlling experiments are (a) to hold constant a variable and prevent it from changing or (b) through manipulation cause the variable to change in some prescribed manner.

When checking research one should try to answer the following questions? (a) What questions have been asked by the author either directly or by implication? (b) What variable is the author manipulating or holding constant? (c) What research forms the basis for this present experiment? (d) What procedures are being used to test the hypothesis? (e) How was the data analyzed? After one has answered these basic questions, a check list can be used to examine the critical elements of the research. The following list would provide a Reading and Study staff member with some idea of the quality of the research being evaluated.

**Title.** Specifies variables relationship, and target population; not longer than 15-20 substantive words.

**Background of Problem.** Presents synopsis or related studies, identifies relevant variables and discusses those selected for the study.

**Problem Statement.** States research problem and indicates its educational significance.

**Hypothesis.** Specific, testable and, if possible, related to theory.

**Research Plan.** Identifies research plan/treatments.

**Target Population and Sampling.** Indicates number of subjects, rationale for selection, and representativeness of sample to target population.

**Stimulus Materials and Measurement Instruments.** Give complete information on characteristics of materials.

**Design.** Identifies relationship of design to hypothesis and shows how design controls confounding variables.

**Data Collection Methods.** Provides complete description of what was done in conducting experiment.

**Data Analyses.** Describes analyses performed, statistical procedures used, and the ratioale for their use.

**Substantice Content.** (a) States research hypothesis/problem. (b) Describes statistical techniques used. (c) Presents level of significance. (d) Provides complete and objective presentation of data (no interpretation).

**Conclusions.** (a) Reviews most significant findings, (b) states major concludions and (c) discusses implications of findings for educational action or research.

**Summary.** Presents a synopsis of the critical ingredients in each of the above components.

**Abstract.** Usually not over 200 words in length. States: (a) variables studied. (b) number and type of subjects. (c) description of procedures. (d) synopsis of major findings.

From our experience we have found that practitioners can improve their research critiqueing skills by practice. The most effective way of gaing this practice would be with a group of colleagues read and critique the same research and then compare your evaluation with the other members of the group.

# RELATIONSHIP BETWEEN RESEARCH CONTROL AND REPORTED RESULTS OF COLLEGE READING IMPROVEMENT PROGRAMS

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An early review of college reading improvement program investigations in which overall grade point average (GPA) was used as a criterion for program evaluation indicated uniformly positive results for participating students (Entwisle, 1960). More recent reviews of such studies, however, have indicated mixed results (Wright, 1961; Bednar and Weinberg, 1970; Tillman, 1972; Fairbanks, 1973; and Santeusanio, 1974).

A number of investigators have suggested that the positive results indicated in some studies should be considered questionable because of poor research design and control. Bliesmer (1955) deplored the "paucity of reports of good, definite research in the literature;" and cited absence of statistical analysis, failure to report significance of results, lack of comparable comparision groups, and weak design as descriptive of many studies. Reed (1956) cited two major weaknesses in studies of reading improvement program effect on academic achievement: (a) failure to equate experimental and control groups on the basis of initial selection and (b) the use of statistics based on theory which assumed randomly chosen observations on non-randomized samples. Santeusanio (1974) summarized this review of reportedly successful college reading program studies by stating that "any conclusion suggesting a positive relationship between participation in a college reading improvement program and GPA may be unwarranted, either because of lack of control for selection or because of poor research design."

In order to investigate the inference that reported successful college reading improvement program studies were inadequately controlled, a plan for rating studies on the basis of specified research control criteria was devised. Specified criteria were also used for categorizing program results with regard to the overall GPA of participating groups.

## PROCEDURES

Studies included in this investigation were all of those located through an extensive literature review which: (a) involved college students already enrolled in colleges or universities: (b) emphasized reading and/or study skills; and (c) included program effect on overall GPA of participating groups as an evaluation criterion. The eighty-seven studies which met these criteria formed the basis of this study.

**Research Control Ratings**

In rating studies by research control, four criteria emphasized by previous investigators were considered. These included: (a) reported use of statistical procedures and level of significance of results; (b) provision of an "outside" no-treatment comparison group; (c) inclusion of procedures for attempting to equate groups on the basis of initial differences in aptitude and achievement; and (d) the provision of a control for initial differences in motivation between experimental and control groups (i.e., control for selection).

In utilizing these specified criteria in rating the research control of the studies, those studies in which no statistical procedures were reported or in which level of significance of results was not reported were rated as "unsubstantiated" studies (19 of the 87 studies reviewed were rated as unsubstantiated). These studies are identified in the references by the letter "U" in brackets [U]. Those studies in which investigators indicated some provision for each of the four criteria mentioned were rated as "adequately controlled." These 37 adequately controlled studies are identified in the references by the letter "A" in the first set of brackets after the bibliographic entry [A]. Those studies in which statistical procedures were utilized and level of significance was reported, but which did not report use of procedures to equate for initial differences and/or which did not provide a control for initial motivation were designated as "inadequately controlled." These 31 inadequately controlled studies are identified in the references by the letter "I" in the first set of brackets after the bibliographic entry [I].

**Program Results**

The 68 studies in which statistical procedures were included and level of significance of results was reported were categorized on the basis of reported results as "successful," "not successful" or having a "successful tendency." The 33 of these studies designated as "successful" were those in which positive GPA results for the participating reading program group were significant at the .05 level. These studies are identified in the reference by the symbol "+" in the second set of brackets following the bibliographic entry [+]. The 21 studies designated as having a successful tendency were those in which numerically positive GPA results were indicated for the participating groups, but results lacked significance at the .05 level. These studies are identified in the references by the letters "ST" in the second set of brackets after the parenthesis [ST]. The 14 studies designated as not successful were those in which no GPA advantage was shown for the participating group or in which the academic performance of the comparison group actually surpassed thatof the reading improvement group. These studies are designated in the reference by the symbol "-" in the second set of brackets after the bibliographic entry [-].

## Discussion of Results

A tabular presentation of the research ratings and program result categories is contained in Table 1. A description of specific techniques used to fulfill mentioned criteria and a discussion of the tentative significance of the information is considered for studies published in the period before 1950, and for each decade thereafter.

### Before 1950

As Table 1 indicates, 75% of the studies published before 1950 were "unsubstantiated" and 25% were "inadequately controlled." No provision for control of selection was made in any of the studies; that is, volunteers were compared with non-volunteers. Those studies which attempted to use comparision groups used the "matched pairs" technique; aptitude and reading test scores, and high school grades or rank, were the most common factors investigated.

### 1950-1959

The first adequately controlled studies, in terms of the four criteria specified, were reported in this period as were the first unsuccessful studies (see Table 1).

Matched pairs, used in 10 studies, continued as the most common used procedure to attempt to equate initial differences; factors used in matching were similiar to those cited for the period before 1950. In addition to or instead of matched pairs, statistical procedures such as analysis of variance were used in five studies as a control for initial differences between experimental and comparison groups.

Table 1

Control Ratings and Program Results for Eighty-seven College Reading Improvement Program Studies Using Academic Achievement as a Criterion

| | Unsubstantiated | | Inadequately Controlled | | | | | | Adequately Controlled | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Successful | | Successful Tendency | | Not Successful | | Successful | | Successful Tendency | | Not Successful | |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| Before 1950 | 9 | 75% | 0 | 0% | 3 | 25% | 0 | 0% | 0 | 0% | 0 | 0% | 0 | 0% |
| 1950–59 | 2 | 12% | 5 | 29% | 2 | 12% | 2 | 12% | 4 | 24% | 1 | 6% | 1 | 6% |
| 1960–69 | 7 | 18% | 8 | 21% | 4 | 11% | 2 | 5% | 4 | 11% | 7 | 18% | 6 | 16% |
| 1970–74 | 1 | 5% | 4 | 20% | 1 | 6% | 0 | 0% | 8 | 40% | 3 | 15% | 3 | 15% |

A number of different approaches to control for motivation were employed. For example, Reed (1956) utilized the random assignment of matched pairs of students of varying ability; and Mouly (1952) randomly assigned students whose reading scores or previous GPAs were below a criterion point to either experimental or comparision groups.

## 1960-1970

Nearly half of the studies published in this decade met the criteria established as indicative of adequate research control, evidencing the improvement in research control quality in this decade. As Table 1 indicates, the largest proportion of programs reportedly not successful was reported for this period.

Methods of attempting to equate for initial differences were divided almost equally between (a) those reporting use of matched group, (b) those using statistical means for equating non-randomized samples and (c) those using statistical procedures to equate groups assigned by randomized block procedures.

Motivational control, in addition to randomized procedures described, included the assignment of all students in the sample to the experimental group, and then utilizing particular sections to serve as comparison groups. Volunteers who could not participate, or who were given delayed entrance to programs, constituted the comparison group in some studies.

The relatively low incidence of adequately controlled successful studies during this decade would lend substance to observations that poor research control has sometimes inflated reported effect of college reading improvement programs on academic achievement. However, it must also be considered that during the 1960s many programs continued to be single-purposed in that emphasis was placed on one or two specific skills regardless of student needs. Most frequently, those skills so emphasized were rate or vocabulary.

## 1970-1974

As is indicated in Table 1, the 20 studies reviewed in the present decade have a higher incidence of adequate control, as well as a higher incidence of "successful" results for such studies than was true for earlier periods.

Randomized procedures, usually randomized block, were used in 10 of the 20 studies. Most of the studies rated as having inadequate control failed in one criterion only, that of providing a control for initial selection. Procedures used for controlling for initial differences between groups included matched pairs (4 studies); statistical procedures with non-randomized groups (5 studies); statistical procedures with groups assigned some type of randomized procedure (4 studies) and studies in which some type of randomized assignment was the total provision made (4 studies).

## Conclusion

The inference that poor research design and control may have inflated conclusions concerning college reading improvement program effect on GPA was partially supported by this study. Investigations published before the 1950s almost uniformly reported programs as successful, yet these studies were either unsubstantiated or inadequately controlled. When the total groups of adequately and inadequately controlled studies were compared, some indications of seemingly great success for inadequately controlled programs was indicated (See Table 1). Slightly more than half (55%) of the inadequately controlled studies and slightly less than half (43%) of the adequately controlled studies were successful. On the other hand, unsuccessful studies accounted for 27% of the adequately controlled studies and only 13% of the inadequately controlled studies.

The conclusion that research quality in college reading improvement program investigations has improved from the 1950s on can be supported by the decreasing proportion of unsubstantiated and inadequately controlled studies published in recent decades. Use of other research design or control criteria, or more rigid investigation of specific procedures used to meet designated criteria, might, of course, reveal additional weaknesses in these studies.

The results of the adequately controlled studies should also be considered. More than two-thirds of this "best-controlled" group of studies were successful or indicated a successful tendency for student groups participating in the described studies. Also, the proportion of adequately controlled studies showing a positive program effect on overall GPA would seem to be increasing, as indicated by studies published in the 1970s.

Although poor research control has seemingly inflated reports of college reading improvement programs effect on GPA, the existence of a group of successful studies that were adequately controlled indicates that other factors may be influencing reported results also. A number of factors that may be worthy of further research and consideration have been suggested by Wright (1961), Maxwell (1971), Fairbanks (1974), and Santeusanio (1974). Possibilities suggested by one or more of these investigators include: (1) the particular content and mode of operation of the program offered; (2) individual differences in response to program variables; (3) student personality variables; (4) level of initial reading skills of student; (5) scholastic aptitude and past achievement of participating groups; (6) the particular curriculum in which the student is enrolled; and (7) staff enthusiasm and professional preparation.

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**(Coded to Indicate Research Control Ratings and**
**Program Results**
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# SUBJECTIVE ASSESSMENT OF AUTO–INSTRUCTIONAL LEARNING TASKS IN SECONDARY AND COLLEGE READING MATERIALS

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What is a student asked to do when he is placed in auto-instructional materials? What are the tasks he performs? Are they valuable? Are they even worthwhile? Those who have used commerical auto-instructional materials, materials which purport to teach skills or concepts without the direct supervision of a teacher, know that the intentions of their producers are not always consistent with the product. While these materials are widely used as a means for individualizing instruction in language arts, and specifically, in reading programs at both the high school and college levels, little is known about the charcteristics and the value of the "learning tasks" which compose them.

This paper outlines a relatively simple system that has been used to characterize and subjectively assess hundreds of such tasks. A catalogue of these assessments is available through the Division for Continuing Education, University of Missouri – Kansas City. This catalogue has several potential uses. It could be used by learning theorists for evolving testable hypotheses regarding the relative efficacy of selected tasks or task sequences. Teacher Trainers could also use the catalogue in in-service and university teacher training. In addition, teachers could refer to the assessments as guidelines for the purchase of curricular materials. And finally, professionals engaged in the design of instructional materials could use the catalogue as a menu for selecting and developing more appropriate and productive learning tasks.

The final catalogue will offer a comprehensive sampling of tasks found in auto-instructional reading materials, cross-referenced by the characteristics the analysis has revealed.

The following outlines the thinking and methodology used in the assessment.

## The Assessment Concepts

Three terms characterized the essential concerns of this analysis –

perfunctory, assumptive, and generative. Meanings for these non-exclusive terms form the crux of the assessment system, thus the meaning will be developed with task samples of each before the other features of the cataloguing schema are described.

**TASK 1 (Perfunctory)**

The student is asked to read an article and to answer four multiple choice questions about the details within it. This proposes to teach the comprehension skill of remembering details. But does it? Probably not. What it does is merely to offer practice in the skill of remembering details. Practicing a skill is obviously useful, but it assumes prior instruction and/or knowledge by the student of the set of learning responses to which he is being conditioned. The potential value of this learning task is further weakened by the fact that the content of the material is used exclusively as a vehicle for practicing a skill. With no other importance attached to it, the content is viewed by the student to be perfunctory, thus contributing very little to the student's "fund of information," a potent factor in reading comprehension. The fact is, if a student learns anything from this task, it is incidental, and quite inefficient as judged against the objective of teaching the identification and recall of important details.

**TASK 2 (Assumptive)**

A widely used auto-instructional vocabulary workbook presents the student with a list of 15 words and tells him to find them in the dictionary and to learn all the meanings. This task proposes to teach the student both the words themselves and awareness of the multiple meanings of words. It is more conceivable, however, that the task would teach the student to dislike the dictionary and to regard vocabulary work as drudgery. The task assumes a good deal about the student. It assumes that the student is competent in using the dictionary, and therefore, that he already knows that words have multiple meanings. It also assumes that meanings are adequately learned from dictionary definitions with no further purpose for studying and without context to focus meaning. Further, this task is assigned on the first page of a piece of auto-instructional material which offers no placement test. While it is true that the dictionary is the best source of precise meanings, and that the study of nuances of meaning contributes markedly to vocabulary acquisition, the absence of a rational context and some consideration of prior learning makes this an extremely assumptive and nearly valueless task.

### TASK 3 (Generative)

This task asks the student to read a brief article and to choose from three drawings the one which best represents the action as described in the article. The task was chosen to teach the reader to visualize the action of the story. The task was preceded by others which introduced, clarified, and offered practice in the subskills necessary for this type of "translation" activity. The activity contributes to comprehension by involving the student in an analysis which is fundamental: recognizing and translating information from one symbolic form (words) to another (pictures). Thus, it tends to aid learning in that it helps to establish the literal comprehension necessary for more demanding tasks. In this sense, it enriches learning. It is *generative:* something had been done which was manageable, from which something has been learned, and that established a platform from which still more can be learned, or generated.

## The Cataloguing System

All materials assessments were recorded on two cards: a *General Information* card describing the characteristics of the total package, and a *Specific Task* card, assessing and characterizing each task individually.

The *General Information* card (See Figure 1) contains title, author, publisher, and copyright date. Under the heading of Format, the form of the material, whether or not it is consumable, and whether it has an audio-visual feature are indicated. Grade Level (or range), Interest Level, and the General Assumptions upon which auto-instructional learning tasks are based are also indicated. Assumptions concerning the material were judged against these criteria: (a) the availability of a suitable placement test, (b) the clarity of instructions to the student, and (c) the extent to which the teacher's role and the uses of the material were stated.

The *Specific Task* card deals with each individual task within the material (See Figure 2). At the top of the card, the location of the task within the materials is indicated by recording the book number of a series, card number in a kit, page number, and/or item number. A reference number keys the *Specific Task* to the *General Information* card.

The *Task* section is used to describe specifically what the student is asked to do. Task Type is the general area of reading dealt with in this task. The Proposed Skill indicates either the skill targeted by the materials or the teacher's manual, or, in the absence of either, an estimate.

FIGURE I

TASK ANALYSIS –
GENERAL INFORMATION
GR ________

Title:
Author:
Publisher:
Copyright:

**Format:**

| | | |
|---|---|---|
| A. Book | A. Consumable | A/V Material (Opt/Req) |
| B. Workbook | B. Nonconsumable | A. Filmstrip O R |
| C. Kit | C. Optional | B. Rec/ Cass O R |
| D. Programmed Material | | C. ________ |
| E. Periodical | | |
| F. ________ | | |

| **Assumptions:** | **Grade Level:** | | | **Interest Level:** |
|---|---|---|---|---|
| A. Valid Placement Device | 7 | 10 | 13 | A. Juvenile |
| B. Clear & Adequate Instruction & Examples | 8 | 11 | 14 | B. Adolescent |
| C. Teacher's Role & Uses of Material Specified | 9 | 12 | | C. Adult |

Related to the Proposed Skill are four possibilities of Function, or intention, of the task, to introduce, clarify, expand, or to offer practice in that skill. To *Introduce* indicates that this is an initial presentation of the skill. To *Clarify* means the skill is further refined. To *Expand* denotes a broadening of the range and use of the skill. To *Practice* means simply that exercises are offered which require use of the skill.

The next category, How Generative?, gives the subjective analysis of the value of each task: (a) Is it manageable? (b) Does it teach what it proposes to teach? (c) Does it provide a bases for richer and further learning? On the basis of these criteria, Task #3 was rated "generated much further learning," and Tasks #1 and #2 were rated "generates little further learning."

The level of Teacher Involvement was estimated when it was not specified. Assumptions, over and above the general assumptions noted on the General Information card, are further indicated as the last entry on this card.

FIGURE 2

| | |
|---|---|
| TASK ANALYSIS – SPECIFIC TASK<br>Location ______________ GR ________ | |
| **Task:** | **Task Type:**<br>A. Vocabulary<br>B. Comprehension<br>C. Word Analysis<br>D. Study Skills<br>E. Rate/Flexibility<br>F. ______________ |
| **Proposed Skill:** | **Function:**<br>A. Introduce C. Expand<br>B. Clarify D. Practice |
| **How Generative?**<br>A. Generates little further learning<br>B. Generates some further learning<br>C. Generates much further learning | **How much teacher involvement?**<br>A. Constant Supervision<br>B. Intermittent Supervision<br>C. Initial and/or Terminal<br>D. None |
| **Assumptions of Task** | |

## Discussion

Two glaring generalizations occur to the authors after reviewing hundreds of learning tasks found in auto-instructional materials. First, many "learning tasks" offered are unimaginative, uninspired, unproductive (if not counterproductive), and, as often as not, unexplained. For example, the specific skill objectives of learning tasks are seldom stated in the teacher's manual and almost never stated in the student's materials.

On the positive side, the second generalization is that many "independent learning" tasks are only one manipulation away from being productive, and probably generative. Often the mere addition of a teacher's input at a critical moment or the discussion with a peer group of responses made on a lonely answer sheet can ignite much richer learning.

It has been often noted that one must have an optimal level of "cognitive dissonace" (distress) with an issue before one is motivated to do something about it. The authors hope that their grueling, and admittedly inexact, assessment and cataloguing of auto-instructional learning tasks motivates more careful inspection of what youngsters (and oldsters, as in Adult Basic Education classes) are asked to do under the guise of "self-pacing," or "independent learning" activities.

# AN INVESTIGATION OF READING HABITS, READING INTERESTS, AND THEIR RELATIONSHIP TO READING IMPROVEMENT OF STUDENTS IN AN URBAN OPENDOOR JUNIOR COLLEGE

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The purposes of the study were (a) to assess the reading habits and reading interests of urban junior college students enrolled in reading improvement courses, (b) to examine the relationships between these factors and reading improvement, and (c) to compare the responses about reading habits and interests of younger and older students.

There have been many studies investigating student reading interests and habits at the elementary, junior high school and high school levels. Some studies in this area have been reported at the four-year college level, but comparatively few studies have assessed the reading interests and habits of urban junior college students. Likewise, little attention has been given to determining readership differences between older and younger junior college students, and to investigating relationships between reading habits and interests, and reading improvement.

Among the studies of readership habits involving four-year college students, Jones (1950), Kingston (1960), and Staiger (1968) report a high percentage of participation in newspaper and magazine reading and a much less frequent involvement in other reading activities. Similar results were found by McDonald and Craig (1961) in a study involving four-year college students and adults in an urban area. This study indicated that the most popular parts of the newspaper were current affairs and the most frequently named magazines were those which concentrated on current news and human interest events. Hull (1951) and Fortenberry (1961) reported like findings in studies involving rural junior college students.

In the present study, answers were sought to the following questions:

1. How regularly are the Ss involved in general reading activities?
2. What reading interests are reported by the Ss?
3. What are the relationships among reading habits, reading interests, and reading improvement of the Ss?

4. Are there differences in the reported reading habits and interests between younger and older Ss?

Throughout the study, the terms "reading habits," "reading interests," "younger Ss" and "older Ss" were interpreted according to the following meanings. Reading habits was defined as the student's opinion of how regularly he was involved in certain reading activities. Reading interests were inferred from books and topics Ss indicated they had read, wanted to read, would write about, or would choose for their peers. Younger Ss referred to those Ss in the traditional college-age bracket, under 23 years of age. Older Ss were those over 23.

## Method

The subjects were 89 students enrolled in reading improvement courses at Essex County College. Ss included 27 males and 62 females ranging in age from 18 to 48. Seventy-five of the Ss were Black, 8 were White and 6 were Hispanic. The younger sub-sample consisted of 32 Ss and the older of 57 Ss.

Reading habits and reading interests were assessed by administering a questionnaire prepared for the study. The questions were divided into two parts. Part 1 consisted of 15 items intended to elicit information about general reading activities and attitudes. Responses were grouped in four categories indicating how regularly the subject felt he was involved in the activity – Regularly, Often, Sometimes, or Never. Part 2 had 16 items designed to gather data on reading interests – preferred reading topics and books and magazines read.

To measure reading improvement, the Nelson-Denny Reading Test was used. Form A was administered as a pretest and form B as a posttest. Grade 13 percentile norms were used to determine reading improvement.

The reading pretest was administered to each S at the beginning of a semester. During the semester, the questionnaire on reading habits and reading interests was given. Ss were urged to respond to the items as candidly and completely as possible, but were not asked to put their names on the questionnaire. A means of identification, unknown to the Ss, was used so that data for correlation purposes could later be secured.

Four scores to be used in calculating relationships were determined for each S. A gain score, representing the difference between the pre- and post-reading test results, was calculated to determine a reading improvement score. A score for regular involvement in reading activities was ascertained by totaling the number of responses each S placed in the Regularly and Often categories on Part 1 of the questionnaire. The number of books and/or topics, related to contemporary affairs and self-improvement that each S recorded were totaled to determine scores for these two interest categories.

## Results

The responses related to involvement in reading activities indicated that 58% of the Ss rated themselves as either sometimes or never involved in the reading activities assessed. Similar patterns were observable for the older (60% sometimes or never) and younger (57% sometimes or never) sub-samples.

An analysis of separate items in Part 1 of the questionnaire revealed further information about involvement in specific reading activities, attitude toward reading, and encouragement of reading. Table 1 presents a summary of these results. Of the various reading activities assessed, magazine and newspaper reading received more responses in the regularly and often categories than any other item, while library use received the lowest.

Attitudes toward reading activities seemed to be positive, having generally higher ratings than actual practice. This was revealed in the items related to wishing for more time to read, maintaining that most reading results in learning, and feeling that most books are not boring. It appeared that the college experiences of the Ss, specifically instructors and courses, were exerting more encouragement for reading than friends, parents, hobbies, or libraries.

Generally, similar patterns were revealed by the younger and older Ss. Three items, however, had notable differences. Forty-seven percent of the younger Ss reported regular or often newspaper reading, whereas 84% of the older ones were in the category. In assessing those factors which encouraged them to read, a much greater percentage of older Ss indicated instructors and college courses than did younger Ss.

From the information on reading interests elicited in Part 2 of the questionnaire a major trend appeared to be evident in the data – an interest in reading about current topics involving contemporary people, their problems and their environments. Included in this trend was a specific interest in Black literature and topics pertaining to Black people. The interest in current topics was especially observable in the responses to seven questions on books students read, topics students wanted to read about, and subjects students would write about.

## Table 1

Analysis of items on the reading habits questionnaire

| | Percentage of Ss responding "Regularly" or "Often" | | |
|---|---|---|---|
| Item | Total Sample Total | Younger Ss N = 32 | Older Ss N = 57 |
| Reading newspapers | 73 | 47 | 84 |
| Reading magazines | 62 | 59 | 61 |
| Discussing readings with friends | 44 | 47 | 40 |
| Reading books other than texts | 38 | 34 | 39 |
| Reading for pleasure | 38 | 38 | 39 |
| Reading "turns me on" | 32 | 31 | 32 |
| Using college library | 28 | 25 | 30 |
| Using library outside college | 16 | 16 | 16 |
| Wishing for more time to read | 57 | 50 | 61 |
| Feeling you learn most from books | 74 | 63 | 79 |
| Finding most books boring | 9 | 16 | 9 |
| Encouragement to read | | | |
| Instructors | 73 | 44 | 86 |
| College courses | 67 | 41 | 79 |
| Friends | 38 | 38 | 37 |

Additional information about interest in contemporary affairs was gained from the response to questions about magazine and newspaper reading. The magazines most frequently read were, in order of frequency of response, *Ebony, Jet, Reader's Digest, Newsweek*. The daily newspaper was reportedly read by 75% of the Ss. The most popular part of the newspaper was the news section. It would appear these junior college students are most interested in reading about the world in which they live. Although the older group showed a slightly higher percentage then the younger in this category, there appeared to be little difference in the pattern between the two sub-samples.

Two other categories of interests were noted. One involved self-improvement, both in skill and vocational areas. The other category was an expressed interest in special areas such as music, art, and sports. Approximately one-third of the Ss expressed interest in reading about self-improvement and in reading in special interest areas. Similar percentages were found in the data for both younger and older Ss.

To determine relationships among reading habits, reading interests, and reading improvement, Product-Moment coefficients of correlation were computed. An observed coefficient of .21 was needed for significance at the .05 level. None of the coefficients reached significance. The highest obtained relationship coefficient ($r = .15$) occurred between interest in reading for self-improvement and reading improvement. There appeared to be a tendency for Ss with expressed interest in reading for self-improvement to have higher reading improvement scores.

## Discussion

The general pattern for measuring student reading behaviors in college reading improvement programs includes the assessment of comprehension, vocabulary, rate, and study skills. The reading factors investigated in this study add a further dimension, general reading habits and interests. Practical application can be made from the data by utilizing it to give direction to developing programs, materials, and techniques. The findings suggest that provision for encouraging reading in its broadest interpretation should be included in the design of reading programs for these students.

The analysis of specific reading activities gives some insight into the forms this encouragement might take. Newspaper and magazine reading appear to be fairly regular activities and could be utilized as a starting point for increased reading involvement. It would seem that emphasis should be placed on more opportunities for reading activities in which these students do not regularly engage (e.g., pleasure reading, discussion of readings, and use of libraries.)

The reading interest areas revealed by the data suggest various kinds of materials and books which might be obtained for these students. Materials about contemporary issues, self-improvement, and certain specialized topics would apparently capture the attention of these students. The study further suggests the use of Black literature and materials pertinent to Black students. These interest categories may be used not only for encouraging increased reading within these areas, but also for expansion and enrichment of reading interests.

The older and younger Ss appear to display the same patterns in their reading habits and reading interests. It is possible that the need for reading improvement shared by all Ss in the study camouflaged differences; nevertheless, it would appear that reading improvement strategies and materials based upon expressed reading habits and interests would be equally applicable to both age groups.

Some relationship between reading improvement and an interest in reading for self-improvement, and reading improvement and regular involvement in general reading activities was indicated in the study. This suggests that junior college reading improvement programs should consider strategies and opportunities for encouraging, expanding, reinforcing and refining general reading habits and reading interests. Also implied is the inclusion in such programs of reading materials, discussions, and opportunities to promote and strengthen student motivation for self-improvement.

One of the most interesting findings is the suggestion that college instructors and college courses are most likely to encourage reading activities. It appears that reading encouragement strategies supported by all members of the college community, and integrated with college course work, would be received favorably by these junior college students.

In conclusion, the study suggested that these junior college students were not regularly involved in general reading activities. They appear to have a positive attitude toward reading, and are most interested in reading about contemporary affairs. The study further indicated the important role played by college instructors and college courses in encouraging reading activity.

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# EYE–MOVEMENT PHOTOGRAPHY: AN INSTRUCTIONAL TOOL?

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Eye-movement photography (EMP) has made a significant contribution to research in reading, demonstrating relationships between specific physiological and performance variables. The major focus of EMP has been to add to the body of basic research. This paper posits the question: "Can EMP be extended to include its use as an effective instructional tool in teacher education?"

The teacher's conceptualization of the reading act forms the basis of instructional procedures and materials selected for the child. Definitions of what constitutes reading abound in methods books on reading. However, the theoretical construct, frequently couched in esoteric language provides little help with program implementation. The writers found EMP to facilitate discussion of specific aspects of the reading act and thus, to provide a clearer conceptualization of the total process.

The students participating in this approach enrolled in a summer course, "The Teaching of Reading (Secondary)" at the University of Manitoba. Prerequisites for the course included a survey course in reading and a year's successful teaching experience.

To maximize the learning experience, the EMP analysis was used in conjunction with an informal reading inventory constructed from the EDL Reading Eye Camera passages. This provides a natural opportunity to incorporate with the EMP analysis a study of related variables – readability, interest, type size and linguistic features.

The eye-movement film to be analyzed were prepared by the writers; however, further implementation of the program will include students photographing their own subjects for study. Although students did not produce the actual materials to be analyzed, they were given the opportunity to photograph several subjects and compare eye-movement data with an analysis of tape-recorded reading performance.

## Procedures and Materials

The subjects to be photographed were randomly selected from the population of seventh graders in a Winnipeg suburban junior high school. The grade placement of subjects at the time of testing was 7.9.

Form 8 of the EDL–EMP passages was retyped in primer-sized type (six characters per inch) for levels one, two and three. Materials for levels four, five, six, junior high and adult were retyped in elite type (12 characters per inch). The original comprehension questions were retained.

A set of criteria was established to provide functional reading levels appropriate for photographing. These criteria are detailed in Figure 1.

**Figure 1**

**Criteria for Functional Reading Levels**

| | Word Recognition | Comprehension |
|---|---|---|
| Independent Level | 1 error | 100% |
| Instructional Level | 2 - 4 errors (levels 1 - 3)<br>2 - 6 errors (levels 4 - 10) | 80 - 90% |
| Frustration Level | 5 errors (levels 1 - 3)<br>7 errors (levels 4 - 10) | 70% |

All subjects began by reading orally the fourth-grade passage. If this failed to match the subject's independent reading level, the examiner administered the next lower level. Using the criteria in Figure 1, subjects were screened and then photographed while reading silently equivalent passages from Form I of the EDL–EMP passages. The median passage was used for cases in which an instructional range was observed.

Each subject was photographed while reading three different passages, one at his independent reading level, one at his instructional level and one at his frustration level. If no true frustration level could be found, the highest level passage (readability level 10.5) was administered.

Of the 13 complete profiles, 10 were selected for further analysis since their independent reading was at the primary level; the instructional reading at the intermediate level; and their frustration reading at the secondary level.

### Analysis and Interpretation

Students enrolled in the university reading course analyzed the 35 mm. filmstrips containing the eye-movement records using the Reading Eye Camera manual and the Graph Analyzer by Taylor (1960). The analysis included counting fixations, regressions, and comprehension responses as well as calculating span of recognition, duration of fixation, and rate with comprehension. Relative reading efficiency and directional attack were also considered.

After the data were compiled and checked, a variety of questions regarding the reading process was discussed. The Reading Eye data were considered in relation to readings from varied sources such as (Burtt 1949; Patterson & Tinker 1942; Spache 1966; Hunt 1966; and Smith 1971).

The following represent types of problems posed for examination and discussion. Given sufficient data to work with, each question can become the focus of a worthwhile problem-solving task.

### Comprehension

What are the interrelationships among fixations, regressions, rate and comprehension? The possibilities are endless (e.g., the data for some subjects will show an inverse relationship between number of regressions and comprehension, which could lead to a fruitful examination of reasons for making regressions. Self-Correction could be a signal that the subject is employing contextual clues at lease to a degree.) Certainly use of contextual clues and at least some level of comprehension are mutually inclusive.

### Legibility and Word Boundaries

How do type size and exaggerated or collapsed word boundaries affect reading performance? Again, one can only speculate about a mere sampling of possibilities. The whole area of word boundaries, both from the standpoint of graphic display and oral output, has recently received a great deal of attention. The intricacies of the effect of these variable boundaries can best be examined by having available technological aids to determine even the slightest impact of variation. Having this resource available for students should facilitate both formulation and testing of hypotheses relevant not only to global changes of varying word boundaries but also to specific effects of these variations with learners known to have varying degrees of perceptual handicap. Although the problem or word boundary has not been viewed as a 'figure-ground' phenomenon, to examine the problem in this light should make reasonable sense.

## Linguistic Segments

Can linguistic factors contribute to changes in observed reading behavior? The literature is replete with references to at least global relationships between reading-language processes. It is one thing to expect teacher education students to accept passively these relationships; however, it is quite another for them to become actively involved in examining specific behavioral changes when the graphic display undergoes very specific changes as a result of linguistic variation. For example, suppose students wish to examine the effects on comprehension of incorporating *x* number of deletion produced transformations in a selection. There is a good reason to expect changes in comprehension as a result of these manipulations (Cosens, 1973; Fagan, 1970). The fact that there is not only a linguistic component, but also a spatial component could lead to interesting research hypotheses.

One further example of the type of problem that was posed from the profile in Table 1 should suffice. The difficulty of reading levels photographed was decided on the basis of oral reading performance and comprehension. The type size of the oral reading passages varied significantly; whereas, the EMP passages varied in size also, but not significantly. This opens possibilities for various hypotheses (e.g., if the change in reading performance is not due to type size, is it possible that specific linguistic features of the passages account for the defference?). The logical follow-up is to examine critically ways in which the structure of passages differs linguistically.

**Table 1**

**Illustrative Case Profile**

| Pre-test Data | | Passage Difficulty | EMP Data – Form 1 | | | | | |
|---|---|---|---|---|---|---|---|---|
| Oral Rdg. Level | No. | Readability | Fix/100 | Reg/100 | Span (Inches) | Dur/Fix (Seconds) | Comp | Rate/Comp |
| Independent | 1 | 2.5 | 122 | 8 | .82 | .26 | 90 | 197 |
| Instructional | 2 | 5.5 | 102 | 9 | .98 | .20 | 100 | 237 |
| Frustration | 3 | 10.5 | 158 | 14 | .63 | .24 | 70 | 202 |

The subject in Table 1 has average intelligence and average reading ability as measured by the Gates-McGinitie Reading Test.

Perhaps the salient features of the data are the increases in number of fixations per 100 words when reading easy *or* difficult materials and the lower comprehension when reading easy *or* difficult materials. This raises a host of questions for the reading teacher with respect to appropriate reading levels for instruction. The other EMP measures are derived measures and consequently indicate similar trends.

The set of data in Table 2 suggests that the materials at the different readability levels are, in fact, varied in linguistic composition.

**Table 2**
**Linguistic Composition Of Form I Passages**

| Passage | Readability | T - Units | Sentence - Combining Transformations | SCT/T-Unit |
|---|---|---|---|---|
| 1 | 2.5 | 8 | 14 | 1.7 |
| 2 | 5.5 | 9 | 31 | 3.3 |
| 3 | 10.5 | 9 | 38 | 4.2 |

Sentence-combining transformations and T-Units represent concrete manifestations of constructs with considerable validity. While little difference in number of T-Units is noted among passages in Table 2, the sharp increase in number of sentence-combining transformations might well affect reading performance. The attested relationships between reading performance and these linguistic variables of reading materials raise interesting possibilities for discussion. Again, the specific concrete physiological data viewed in relation to specific variations (i.e., linguistic variations) in reading material afford opportunity for greater specificity and focus than can be achieved through general discussion of the reading process.

## Rate of Comprehension

A question closely related to the foregoing discussion is "What are some of the probable causes of rate limitations?" With the aid of the reading eye camera students are free to manipulate one variable at a time as a result of a specific hypothesis and then to test the behavioral changes, if any, that ensue.

## Summary

In conclusion eye-movement photography holds promise not only as a research-experimental medium, but may also be used as a viable instructional tool for teacher training and teacher in-service – a tool that can provide the learner with a basis for "reflection of the reading process".

Perhaps the most exciting potential for teacher development afforded through EMP is the opportunity for students to collect eye movement data from a small sample taking repeated measures when one variable (e.g., one linguistic structure, is manipulated). It is this kind of mini-research which is desperately needed at the classroom level. Only if colleges of education offer experience and guidance can we expect teachers to collect systematic data and interpret them. Further, unless we reach the stage where we train teachers to formulate intelligent hypotheses and test these systematically, there is little hope of expecting more than the mere "gut level" operation so prevalent in classrooms.

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# A COMPARISON OF THE READING INTERESTS OF PRISONERS AND COLLEGE STUDENTS

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## ABSTRACT

If reading does have observable effects, some trace of them should be seen in comparisons of the reading practice of groups of readers differentiated sharply by situation. The study explored differences in reading interests expressed by age-equivalent prisoners and college students. A direct comparison of reading interests was chosen over remembered histories since a basic assumption is that reading interests serve as indicators of current reading practice.

The instrument developed provided variables of readable popular material in 15 categories. Two forms of fixed alternative surveys consisting of three short book excerpts per category were used. Only three of the samples exceeded a Gunning Fog readability level of 13.

One hundred and two college freshmen and 112 school-attending inmates of two Wisconsin penal institutions responded to the surveys. The 18 to 20 year-old subjects were roughly equated in literacy by standardized tests, with a range in grade-level reading scores from seven to 17.

Difficulty of material can affect interest, and a reader's jundgment of difficulty depends partly on his reading ability, so two operations preceded comparison of preferences. Spearman's rank correlations between rankings based on readability formula and those based on mean preference ratings were calculated. They were .27 for prisoners, .28 for college students, and .33 for the total group, indicating that reading ease or difficulty accounts for 7.2%, 7.8% and 10.8% of the variance in ranks.

Subjects were then divided into three categories of reading ability and preference rankings of ability groups were tested by the Kruskal-Wallis one-way analysis of variance. No significant difference was found.

Finally the Mann-Whitney *U* Test applied to ranked mean ratings indicated no significant differences in the rankings of college students and prisoners preferences. A chi-square analysis of intensity of responses did indicate that prisoners responded significantly more frequently than college students to the extreme high and low positions on the five-point scale.

Within the range of material used in this study, then, no statistically significant difference pattern of reading interest can be said to differentiate young criminals from college students.

# REFLECTIONS AND OBSERVATIONS CONCERNING THE USE OF AN INFORMAL READING INVENTORY IN ADULT BASIC EDUCATION

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## ABSTRACT

Discusses observations from a series of investigations in which an informal reading inventory (IRI) for adults was constructed and subsequently used to study the reading performance of adults. Evidence that adults experienced increasing difficulty as the test progressed suggested that the IRI format was functional for the adult population. Because of a serious population attrition in the second investigation, the concept of instructional level for adults could not be verified. However, a way of interpreting the test without reference to the instructional level concept was explained.

A comparison of adults with children who had read the same passages provided information concerning the differences between these two age groups. Trends were also noted for readers of similar proficiency. Performance factors were analyzed after grouping the data first on the basic rate standards and then by a modified IRI criteria (92% oral reading accuracy and 60% comprehension). A comparison of those who read the 4th level passage and the 7-8 level passage showed that when these data were grouped by the rate standard, accuracy of oral reading on the average was 99% for both passages as well as the 9-10 passage level. However, both comprehension and rate decreased for those who were grouped by the modified Betts' criteria. The effect of grouping data by rate standards is to cluster the scores of readers whose rate and accuracy are considerably higher than those grouped without regard to rate. Future research will need to consider a wide variety of possible standards for scoring an IRI if a true level of instruction is the desired product of the testing.

Finally, specific aspects of the IRI requiring further research were related to similar concerns about the use of criterion referenced tests.

# SELF–CONCEPT–OF–ACADEMIC ABILITY AND READING PROFICIENCY

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## ABSTRACT

In studies conducted by Brookover and others, direct relationships were found to exist between self-concept and various types of academic achievement. The primary purpose of the investigation was to discern whether a statistically significant relationship also existed between self-concept and reading achievement.

The Nelson-Denny Reading Test was administered to 253 college students. The scores attained on the test were utilized to classify the students as reading "above actual grade placement" or "below actual grade placement", according to the norms for their respective groups.

Further stratification was done on the basis of sex. Thus, the students were classified in one of the following four categories: (a) males reading above actual grade placement; (b) females reading above actual grade placement; (c) males reading below actual grade placement; and, (d) females reading below actual grade placement.

All students in each of the four categories were also given the Michigan State Self-Concept of Academic Ability Scale (MSCOAA). The MSCOAA is an eight item Guttman Scale with total scores indicating that the student perceives himself as "POOR", "BELOW AVERAGE", "AVERAGE", "ABOVE AVERAGE", or "SUPERIOR" ability.

All research questions were tested for significance by utilization of a two-tailed t-test. Classification factors were sex and reading achievement. The .05 level of confidence was set for each research question.

Through utilization of the aforementioned procedure, a statistically significant difference was found to exist between the mean self-concept-of-academic ability of college students reading above and below actual grade placement. No statistically significant difference existed between the self-concept-of-academic ability of college male and female students. Although there was no statistically significant difference between the self-concept-of-academic ability of male students who read above actual grade placement and their female counterparts, there was a statistically significant difference between the self-concept-of-academic ability of male and female college students who read below actual grade placement, female scores in self-concept-of-academic ability being higher than male scores.

# SYLLABICATION SKILLS OF COLLEGE STUDENTS

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## ABSTRACT

The importance of syllabication as a part of basic skills instruction in the preparation of teachers of reading has been advanced by authorities in the field of reading.

The study focused on evaluation of students' proficiency in application of nine structural analysis generalizations with a pretest before instruction and a posttest after systematic instruction and study. The sample (N = 83) was comprised of students enrolled in basic skills courses in reading from two institutions.

A measuring instrument was constructed and validated for the study. Six forms of the 100 item test were constructed of words that were chosen to test generalizations selected by applicability of usage in vocabulary of five basal series for grades 1-6. Subject-matter experts were consulted for verification of the value of the nine generalizations to the field of reading and to establish educational validity. Tests were constructed to be diagnosic as well as evaluative.

Tests were administered as posttests to 79 students enrolled in a basic skills course in reading to determine the validity and reliability and to determine whether the forms were parallel.

Tests were administered as post-tests to seventy-nine students enrolled in a basic skills course in reading to determine the validity and reliability and to determine whether the forms were parallel.

Analysis of the data indicated that content validity and validity as evaluated by judges met the requirements for the domain to be tested. Validity and reliability correlations were significant at the .001 confidence level and the test forms maintained consistency in means, standard deviations and standard errors of measurement indicating the forms were parrallel.

Results of the study showed mean score gains after completion of systematic instruction and individual study ranged from 10.1 to 13.1. Individual proficiency showed gains in all student's scores.

Analysis of the data indicated that difinite gains can be made in raising the proficiency level of students' syllabication skills after systematic instruction.

# CHANGES ON COLLEGE READING STUDENTS' ACHIEVEMENTS AND ATTITUDE AS A FUNCTION OF SPONTANEOUS DIALOGUE

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## ABSTRACT

Environmental structure long has been thought to affect learning. Part of the classroom environment is its dialogue patterns. The present study focused on two specific programs of behavior change used to produce spontaneous, or student-to-student, dialogue and assessed how these two programs of dialogue change affect student achievement and attitude of potential reading teachers.

The study utilized a verification system, the VICS, to assess: (a) whether the experimental treatments introduced actually existed as defined and (b) whether they produced spontaneous dialogue as suggested.

A multivariate analysis of variance on the dependent variables of achievement and attitude evidenced statistically significant differences at the .01 level. An analysis of variance on each dependent variable also evidenced a statistically significant difference at the .01 level.

Further comparisons within each dependent variable (F-test) showed that both treatments produced significantly better results than the lecture control group obtained on the achievement variable, but only the stimulus change group produced significantly better results when compared to the lecture group on the attitude variable.

# LITERACY IN DEVELOPING COUNTRIES

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In 1951, the UNESCO Expert Committee on Standardization of Educational Statistics defined an illiterate as one who could neither read nor write, with understanding, a short simple statement about his everyday life with a fourth or fifth grade equivalency. In 1962, the same UNESCO committee revised the statement to read, "A person is literate when he has acquired the essential knowledge and skills which enable him to engage in all those activities in which literacy is required for effective functioning in his group and community, and whose attainment in reading, writing, and math makes it possible to continue to use these skills toward his own and the community development" (Harman, 1970).

Fifty percent of the world's elementary and secondary school age children are not going to school. Twenty-five percent of the world population will not attend school in this century. More than 40% of the adult world population (about 80 million people) are estimated to be illiterate. Sixty-five percent of the world population falls below the level of functional literacy. In Saudi Arabia, Somalia, and Yemen, the total adult population is reported as illiterate (Newton, 1972, p. 250). By preventing the circulation of factual information between races, nations, and culture groups, illiteracy deters the development of individual and national capacity.

## National Literacy Programs and Problems

The first organized attempts at combating illiteracy by trying to teach adults to read and to write date back to the Age of Enlightenment of the eighteenth century when millions of people fought for a representative form of government and were free to make their own political, economic, and educational decisions. It was soon learned that an illiterate populace could not govern itself. During the nineteenth and early twentieth century, most literacy campaigns were planned and sustained by volunteer organizations such as churches, missions, and nongovernment operated programs. Between 1950 and 1970, many government supported literacy programs were initiated. In 1964, the United Nations member states agreed to participate in the UNESCO Experimental World Literacy Program. This program assumes that literacy, while important to the economic progress of a community, is basically an instrument designed to enhance human dignity and creativity, and as such, is a universal right. By June, 1969, 52 UNESCO member nations had agreed to participate in the program. Now, 92 countries report the existence of literacy programs (Harman, 1970). The UNESCO approach to teaching functional literacy is to combine job instruction in industrial and agricultural development with literacy development. The enrollment in these programs has jumped from 25,000 in 1969 to 235,000 adults in 1971 ("World," 1971, p. 460).

Highly trained personnel to work with functionally illiterate adults is lacking, although several countries are beginning to train special cadres such as Iran's "Army of Knowledge" and the Laubach "Each One Teach One" approach (Laubach, 1960). Still, the typical literacy program is based on a set of elementary school primers.

Six problem areas arise from these national literacy efforts:

1. According to returns from a UNESCO survey of forty-four countries giving figures which are internationally comparable, three-fourths of the countries allocate less than one percent of their total budget to adult education (Brocke, 1970).
2. The shortage of qualified teaching personnel.
3. The shortage of suitable adult teaching materials.
4. The lack of scientific evaluation of adult literacy projects.
5. The difficult transition from the experimental stage of an adult literacy program to the intensive implementation of literacy programs into the industrial and agricultural development of the country.
6. The falsified reports of successful literacy programs from developing nations (Myrdal, 1974).

The major objectives of national functional literacy programs is to tailor literacy programs which satisfy the needs of national development plans. These programs focus on individuals who may receive maximum benefits as a result of literacy training; the training is intensive rather than extensive, selective rather than diffusive, work oriented rather than culture oriented (Blaug, 1970).

Given such limited financing and resources, the moral concern of whether to place literacy programs in the primary grades of the school system or in adult education is always an important issue. In Third World countries such as Africa where 81% of the school age children drop out in the primary grades (Brocke, 1970, p. 181), literacy programs must be selectively placed in the adult sector of the population.

The enormity of national literacy development calls for the intervention of the most modern educational technology, particularly television and radio, communication satellites, literacy centers, and computer-assisted instruction. Radio and TV are usually used for publicity of available literacy programs, literacy centers, and literacy tutors. Television, a visual and sound media, must be followed up with some kind of personalized reading and writing activity. An effective Computer-Assisted Literacy Development Program for Career-Oriented Young Adults (Golub, 1973) uses tutorial techniques and employes audio and visual media. Literacy development is usually improved when the sources and media are varied in expression and method of presentation.

Major problems with these programs are: (a) lack of coordination between various programs; (b) lack of ongoing systematic planning and evaluation, and (c) lack of follow-up and large scale implementation of experimental programs. For a literacy development program to be successful, reading materials must be available, press and library services must be established, and literacy development must be linked to life long learning of the individual and to the economic and social development of individual and nations.

If measures are not taken, an adult functional literate can regress to illiteracy. Korea has initiated a program for reeducating mothers of school age children. Turkey has a literacy program for army recruits. Nigeria has a literacy program for tobacco growers, and England has a literacy program for new immigrants. To be permanent, literacy must be functionally relevant to the basic economic, social, and cultural goals and aspirations of the individuals and nations involved.

## Literacy and National Involvement

Not all developing nations are attacking their literacy problems with the same degree of involvement. Nor is there any reason to assume that the national goals of all political leaders of developing countries include a literate populace.

In the African nations below the Sahara, primary school enrollment is 71.8%, the dropout rate over the six primary years is 68-81%. Assuming that permanent literacy requires four to five years of schooling, the number of adult illiterates or functional illiterates is enormous. In the Camercons it is government policy that all members of the party in power must attend literacy classes. Such political mandates are not unusual, such as the South African attempt to keep nonwhites from attaining literacy (MacArthur, 1970).

The Arab states claimed 1,300,000 illiterates out of 2,700,000 children reaching the age of 15 in 1970, a drop in the illiteracy rate from 59% in 1965 to 48% in 1970. The Arab states recently drafted a law requiring private firms to provide literacy courses so that eventually employing illiterates will be illegal (Qutub, 1971).

Asia has an illiteracy rate of 46.8% and has only recently begun to tackle the problem (Bracken, 1971). Adult literacy training has not yet come to Asia on a large enough scale to make a difference. Maheu (1972, p. 4), Director General of UNESCO, reminds us that the nations of the world spend an average of $7,800 to train and equip one soldier and only an average of $100 to educate one child.

Latin America has an illiteracy rate of 23.6% down from 32.5% within ten years. This reduction is due to an attack on illiteracy both in the primary grades and in adult education. In 1957, Latin America launched a continental "Major Program" to attract and retain children in primary education. In ten years, enrollment was increased by 35 million children (UNESCO, 1970, p. 14)

Brazil has fifteen million illiterates, 26% of its population. More than three million adults have achieved literacy since 1970 due to a new program MOBAL (Movimento Brasileiro de Alfabetizacoro). The number of literates in Brazil is expected to reach fifteen million by 1980. MOBAL has 67,000 centers throughout Brazil. The cost of making an adult literate is approximately $9.33, about $25 less than the UNESCO estimated average (Fletcher, 1972, p. 12).

Iran has two major crash literacy programs under way. The illiteracy rate has been lowered from 80% in 1962 to 50% in 1969 (Fakouri, 1970, p. 86). The one program is the "Literacy Corps". Volunteers are paid on a part-time basis for teaching literacy skills to adults. After attending school for 44 hours to learn how to teach adults to read and write, a volunteer must recruit his own class of 20-40 students who attend literacy class for six months. In order to get paid, the teacher must hold the interest of his class, find means of helping them regularly, and motivate them to pass the exams. After attending literacy class for twelve months an adult receives a certificate which allows his employer to increase his pay by 5%. The Literacy Corps has made 1.5 million children and adults literate since 1969 at the cost of about $12.00 per person for a six month period. The ratio of girls to boys has increased by 26%.

Iran's "Army of Knowledge" recruits young men who are high school graduates and gives them the opportunity to serve either in the army or to teach. After a sixteen week basic training period, young men who opt to teach are assigned to the Ministry of Education and sent to villages to teach for twenty months which completes their service (Brocke, 1970, p. 182).

Literacy development in China is difficult to assess. No official recent reports are available. Stanley Paulson, Dean of the College of Liberal Arts at The Pennsylvania State University, after a trip to China in the winter of 1973-74, reports in conversation that he was told that in most provinces of China in 1948 the adult illiteracy rate was about 80%. In 1973, this illiteracy rate was reduced about 30-35% with a current literacy rate somewhere between 45-50%.

Illiteracy continues to be a problem in the United States. The outcome of Harris' (1970) report indicated an estimate of 13% (18.5 million) of American adults failed to fill out simple forms with fewer than 10 percent errors, while 3% (4.3 million) obtained more than 30% errors. The estimated illiterate and functionally illiterate adults in the U.S.A. is approximately 20%.

## Conculsions

Illiteracy is primarily a social and socioeconomic problem rather than an educational problem. India has a staggering illiteracy rate, 50% of the 500 million population. However, in Germany and Hungary, illiteracy is almost nonexistent. Mass armies of volunteer literacy teachers are necessary to overcome adult illiteracy. Where adult illiteracy is almost nonexistent, adult education is financed and supported as part of the public school educational system. Motivation in the economic life of a nation or an individual is needed to attract adults to literacy centers. Where social and economic stagnation exists, illiteracy will persist. Reading materials which prepare for and relate to a likely body of skills and information needed for industrial or agricultural work appear to attract illiterates. Materials which undermine the social, political, and economic status quo of a developing nation will run into problems and eventually be excluded from the literacy curriculum.

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# PREVENTION OF READING PROBLEMS IN HIGHER EDUCATION

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The improvement of reading skills might be an important strategy for survival under the competitive system of higher education in many of our best universities. The ability to gain entrance into these institutions and to maintain an adequate grade-point average could be directly related to proficiency in reading and study skills. College entrance tests require a high level of reading efficiency if certain requirements are to be met. Although all students admitted to major universities are considered good readers, some are better than others. It is not known how many intellectually competent high school students were not able to make the score required for college entrance because of poorly developed reading skills.

In many schools throughout the United States, reading is taught through the sixth grade only, and students are expected to apply those reading skills later in high school. However, subskills such as flexibility in rate, skimming, inference, and analogy cannot be fully understood during the elementary grades. The need for specific reading skills is directly related to age and maturity factors. The ability to comprehend ideas and critically evaluate material is learned at progressively more difficult levels during the growth and development process (Strang, 1968). To prevent some of the reading problems encountered by college freshmen, it is necessary to encourage the teaching of reading at the secondary school level. Then, the continuity of developing skills would be maintained in relation to the maturity process of the reader.

In 1972 a reading program for high school students was designed at the University of Florida using as a model the counseling-oriented, developmental individualized approach of the University of Florida Reading and Study Skills Center. Later, research studies were completed in several middle and high school settings *(Guttinger, 1974; Guttinger, Hines, & Larsen, 1972; Larsen & Guttinger, 1972).* Results gave evidence of significant growth in the skills of rate, comprehension, and vocabulary during a nine-week period when compared with the traditional method of presenting reading.

A college model was chosen in designing the reading program because high school students are more like adults than children. An adjustment was made to accommodate the needs of teenagers when adapting procedures of the Reading and Study Skills Center. Because developmental tasks associated with movement into adulthood include acceptance of responsibility, growth in independence, and commitment to a goal (Havighurst, 1972), the right of decision making in planning and completing a reading program was made an integral part of the student's responsibility. Learning to improve reading skills was placed within the context of the student's psychological and physiological growth.

At the University Reading Center all students from freshmen to graduate students are encouraged to enroll for approximately two months, on a three-days-a-week schedule. At the high school level, all students are scheduled to participate during a two-month period each year regardless of their reading skills. Usually the focus of high school reading programs has been on those students in the lower percentile ranks, and the better readers have not been encouraged to develop more efficient skills. Past attitudes have been detrimental to all students, including those considered remedial (Purkey, 1970). The total school thrust has to change from remediation of reading to a developmental approach.

Individualizing reading in high school requires flexible scheduling by administrators and a total school understanding of the motivational aspects in educational counseling. To facilitate growth in reading, a helping relationship rather than a teacher/learner environment is encouraged. An individual conference is scheduled for each student after pretesting to determine strengths and weaknesses of subskills in relation to those of other students at the same grade level. During that time scores are interpreted, the student's goals are explored, and a program of action for the next two months is planned jointly. The reading counselor helps the student define his or her perceived needs and the goals the student expects to achieve. It is important to have a wide variety of reading materials at all levels placed in a laboratory setting for the student's use. The right to make choices from many options is a factor that stimulates a sense of commitment. During the next six weeks, each student is given an opportunity to be independent in pursuing his/or her goals. Frequent oral and written communication with the reading counselor gives each student positive support, but it is the student who assumes responsibility for improvement. Posttesting and a final conference between the student and counselor give the evaluation process meaning. Students are able to see the direct results of their efforts when a high level of interest has been maintained.

The differentiation of the roles of teacher and reading counselor in a high school setting needs to be clarified if an individualized, developmental reading laboratory is to be fully integrated into the total school activity. The goal of the classroom teacher is to develop competency within a content area – a body of knowledge is imposed on the student. Teaching the subject may involve lectures, discussions, audio-visual aids, experiments, and field trips utilizing auditory, visual, and tactile modalities. The level of reading need not determine the level of learning. On the other hand, the reading counselor in the laboratory is concerned with the process of reading and with progress within the student's frame of reference. Present competency in reading is not stressed as much as movement toward a higher level. Progress may be noted if student purposes have been clarified, positive attitudes stimulated, and ego strength augmented. Each person may practice without fear of failure in the safety of the reading laboratory before trying to apply skills in the "arena" of the classroom. Short-term goals are possible to reach, especially if expectations have been realistic. Successful experiences seem to be motivational in helping a student move toward the next step on the continuum of reading.

To implement the establishment of this developmental, individualized program, it was necessary for high school faculty members to understand concepts important for the success of the program. During the past two years over twenty-five workshops have been given to administrators and teachers throughout Florida. An orientation to the individualized, developmental approach to secondary reading is given over a three- or four-day period of time. Participants become "learners" themselves and experience personal growth in their own reading skills. They are given an opportunity to evaluate the assets of a short-term, self-directed program and to explore the relationship between reading development and personality growth.

During the first year, only teachers were included in the workshops. Although they were enthusiastic, they had little authority to effect change in their assigned schools. Since that time a requirement for participation is that administrators with decision-making power enroll with their teachers. Schools from most of the counties in Florida have sent supervisors, coordinators, counselors, principals, and teachers to participate in the sessions. As a result of these workshops, over fifty individualized, developmental reading laboratories are functioning in secondary schools at the present time and many more are in the planning stages.

A reading center at the college level can make an important contribution by helping high schools establish reading programs that stimulate growth in reading for all students. Because faculty members in a college center are acutely aware of the needs of entering freshmen, they can be of special service to high schools, which are preparing students to be successful in higher education. The effectiveness of a high school program will be greater if administrators and teachers have accepted a developmental approach to reading and have an awareness of teenage developmental tasks associated with independence, responsibility, and commitment. Reading programs at the secondary level which enhance students' belief in themselves and augment their growth toward independence could make adjustment to college life easier. The prevention of reading and study skills problems during the college years would increase opportunities for intellectual growth for all students.

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# EVALUATION OF A MODULAR READING METHODS COURSE

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The reading methods course at the University of Houston is part of that institution's competency-based teacher education program. The purpose of this paper is to delineate the process by which the reading methods course is constantly being revised, with particular attention to the feedback system from students which is used as one of the bases for making changes.

The first step in establishing the reading methods course was to determine the orientation of the teacher education student upon the completion of the reading methods component. The reading faculty working in the competency-based teacher education framework, using input from students, teachers, and principals in the public schools, ascertained that the student ought to possess and be able to demonstrate the skills necessary to diagnose a child's reading needs and to select and direct a program once the needs are identified. In the second step, specific objectives were established on the cognitive, performance, and consequence levels and were then grouped into twenty-two units.

The format chosen for aiding students in meeting the objectives of each unit was the instructional module. Twenty-two modules, one for each group of objectives, were designed. The format for each module was based on that developed at the University of Houston during 1972 and included an overview, a listing of the objectives for the given topic, a self-pre-assessment, a flowsheet, and expository material. The student completed each module by reading the overview and objectives, taking the self-pre-assessment, and deciding whether his performance was satisfactory. A student who was satisfied with his performance on the pre-assessment took the post-assessment. A student whose performance on the pre-assessment was not satisfactory completed as many of the available enabling activities as he wished. The enabling activities consisted minimally of a reading in the expository section of the module and a class session. Additionally, there were readings from other sources, audio-tapes, video-tapes, slide-tapes, and group seminars. Once the student felt confident about meeting the objectives, he took the post-assessment, which was based on the objectives and was similar in format to the pre-assessment. Post-assessments were proctored and graded by an instructor. A student whose post-assessment was satisfactory was free to proceed to the next module, a student whose performance was not satisfactory was guided to complete additional enabling activities before he attempted the post-assessment again. The student was not penalized for repeating a post-assessment.

Field testing was begun in January 1971, shortly after the first set of modules was written. Data were collected from students throughout each semester. Each student was given a form which requested that he rate various aspects of the course as very helpful, helpful, or not helpful. Additionally, space was left for commenting on any particular parts of the course and for listing those items in the course which the student found most and least helpful.

Since field testing began, the modules have been rewritten three times, based on feedback from over 700 students and input from four members who have been actively engaged in the course, teachers, and principals. Objectives and enabling activities were changed. Objectives for working with children were added. Occasionally, choices of objectives were made available to students when a particular set of objectives appealed greatly to one group but not at all to another.

In addition to specific information being gained on each module, general trends were discernible. The following were consistently perceived as *very helpful* by a plurality of students:

1. Objectives
2. Self-pre-assessments
3. Flowsheets
4. Class sessions which helped students meet the objective
5. Expository materials contained in the modules which helped students meet the objectives
6. Working with children in the schools.

A plurality of students consistently perceived the following as *helpful:*

1. Audio-tapes, video-tapes, slide-tapes
2. Readings not contained in the modular material
3. Overviews of the modules.

A plurality of students consistently perceived the following as *not helpful* :

1. Class sessions which did not help students meet the objectives
2. Expository materials included in the materials which did not help students meet the objectives
3. Term papers
4. Post-assessments.

These data would appear to have instructional implications for competency-based programs. Apparently, once students have been informed of objectives, they attend to them. Second, class sessions and expository materials should directly help the students in attaining the objectives. Third, audio-visual aids seem to be less helpful to students than class sessions or readings included in the modules. Fourth, post-assessments and written assignments are not perceived as helpful by students, whereas any form of assessment in a teaching situation is highly regarded. These areas are currently being proposed for more detailed study.

# THE EFFECT OF INTRODUCTORY COURSES IN THE TEACHING OF READING ON COLLEGE STUDENTS' ABILITY TO READ

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Studies of the sixties relating to teacher competency (Austin, *et al.*, 1961; Austin & Morrison, 1963; Conant, 1963) have led to general agreement that a need to increase the level of teacher competency exists. In an investigation of teacher competency in word analysis skills. McNinch and Shaffer (1974) found evidence to support earlier studies (Aaron, 1960; Spache & Baggett, 1965; Ilika, 1969) indicating that prospective and practicing teachers are not able to pass competency measures of selected skills.

Two possibilities exist for facilitating increase of teacher competency in reading skills. One involves college courses specifically designed for prospective teachers to focus on their individual reading skills. Such courses would involve diagnostic testing and subsequent prescriptions focusing on those reading skills that appear to need additional emphasis, as is done in traditional reading labs.

Miller (1958) found that practicing teachers enrolled in a five-week summer course entitled "Methods of Increasing Reading Efficiency" made gains in their own reading rates at the same time that instruction was given in methods for use in the classroom. These findings led to the suggestion that teachers may improve their techniques of reading instruction at the same time that their reading efficiency is being developed. Another possibility is that teacher competency may increase through incidental learning and transfer of skills from teacher training courses.

The purpose of this study is to investigate the possibility of incidental learning and subsequent transfer of personal reading skills in the areas of vocabulary and comprehension as measured by the Nelson-Denny Reading Test.

## Methods and Techniques

The Nelson-Denny Reading Test was administered to eight classes of undergraduate students (N=183) enrolled in CIE 309, "Developing Skills in Reading," at the University of Southern Mississippi during the spring, summer, and fall quarters of 1974. This course, designed to be taken by education majors at the junior level, is the first course in reading methodology. Students who successfully complete this course should have a knowledge of the skills that comprise the reading process. Attention is focused on the pre-reader, the beginning reader, the developing reader, and finally, the mature reader. Skill emphasis is placed in three areas: (1) word recognition, (2) comprehension, and (3) study skills.

The Nelson-Denny Reading Test is useful as a measure of ability in the areas of vocabulary, comprehension, and reading rate. This test may be used as a screening device, as a predictor of academic performance, and as a means of diagnosing individual problems. It yields separate scores for each subtest, vocabulary and reading comprehension, and a total score.

Designed for use in grades nine through sixteen, the test has two comparable forms which contain 100 vocabulary items and 36 reading comprehension items. The subtests have computed validity indices as follows: vocabulary, Form A–mean 47.5, Form B–mean 47.4; reading comprehension, Form A–Mean 44.6, Form B–mean 45.3. Obtained reliability coefficients, computed by equivalents forms method are as follows: vocabulary, .93; comprehension, .81; total, .92 (Nelson, Denny, & Brown, 1965).

The Nelson-Denny Reading Test was administered to all members in eight CIE 309 classes. The administration of the test and collection of data were handled by the investigators. Alternate forms of the test were administered as pretest before the students had any class work, and as posttest at the completion of all course work. Four of the eight classes of junior level education students were assigned From A as a pretest and four were assigned Form B. Posttesting in either case was done by using the alternate form. The tests were administered according to directions in the examiner's manual. Only the students who completed both pretest and posttest were included in the final sample: Form A pretest, n=103; Form B pretest, n=80.

The dependent variables used in the analysis of the Nelson-Denny Reading Test were the raw scores on the vocabulary and reading comprehension subtests and for the total test. Each dependent variable was analyzed under the same analysis of variance design. The design was a 2x2 with repeated measure on the second factor. The first factor was composed of the order in which the two forms of the Nelson-Denny

Reading Test were administered. The second factor was the repeated measure of pretest and posttest score for each subject.

## RESULTS

Group x Trials analysis of variance on the vocabulary scores obtained by administration of the Nelson-Denny Reading Test indicated a significant interaction $F$ (1, 181) = 33.14, $P < .05$ among groups and trials. Also, a significant ($p < .05$) main effect difference was found between trials, with the trail 2 (posttest) mean being of greater magnitude than the trial 1 (pretest) mean.

Graphing of cell means in order to obtain a visual display of the interaction showed that group 1 had a markedly higher gain from pretest to posttest than did group 2; that is, that group 1 evidenced significantly more gain from pretest to posttest than did group 2. The graphic display of the interaction indicated gain for both group 1 and group 2 from pretest to posttest. Taken together, the gain, as tested in the trials main effect, was significant. Students did evidence significantly higher scores on the posttest than on the pretest, without regard to form of test.

A second Groups x Trials analysis of variance was performed using comprehension scores obtained on the Nelson-Denny as the dependent variable. Again, a significant Groups x Trials interaction, $F$ (1, 181) = 4.301, $P < .05$, was noted. In this analysis, neither main effect differences between groups nor trials were found to be significant.

Graphically displayed, the interaction showed an increase in mean scores from pretest to posttest for group 1, but a slight decrease in mean scores was indicated for group 2. In comprehension, no significant differences between pretest performance and posttest performance were found. Graphically, the interaction appears to indicate that without regard to groups, a line virtually parallel with the X-axis exists.

A third and final Groups x Trials analysis of variance was performed on total test scores. Results of this analysis indicated only that a significant main effect for trials was extant. It is postulated that differences in general configurations of the subtest variables masked an overall Groups x Trials interaction on the total test scores. However, the total test scores obtained on the posttest were significantly greater than were total test scores obtained on the pretest $F(1,181) = 94.04$, $P < .05$.

## DISCUSSION

The results of this investigation have shown that differences do exist within Groups x Trials in vocabulary raw scores. The major conclusion drawn is that these differences are due to incidental learning in CIE 309, that is, that students taking a course in the teaching of reading can improve their own ability to read by virtue of exposure. However, a large proportion of the variance on test scores seems to be bound up in forms of the test, since Form A appears to be more difficult than Form B. This difference accounts for the occurrence of a significant interaction between groups and trials. While overall scores were significantly higher on the posttest than on the pretest, those subjects who were administered Form A first, followed by Form B (group 1), evidenced considerably more gain from pretest to posttest than group 2, who were tested in reverse order. In support of the major conclusion, it should be noted that even with the pulldown effect evidenced by group 2, an overall difference was found between pretest and posttest scores, with posttest scores being significantly higher than pretest scores on the vocabulary variable.

On the comprehension variable, a significant Groups x Trials interaction was also found. In this instance, however, the interaction was not accompanied by a significant trials main effect. Further, on the comprehension variable, group 2 actually regressed, (i.e., their posttest scores were, on the average, lower than their pretest scores.) This finding is postulated to be attributable solely to the differential difficulty of the two tests. If this assumption is warranted, two alternative explanations of the data can be put forward:

1. Some incidental learning is occurring, but the magnitude of that learning is masked by the inequality in the difficulty of the test forms.
2. No true incidental learning is occurring; what appears to be gain in reading ability is merely an artifact of the inequality in the difficulty of the forms of the test.

In order to arrive at some conclusion, attention should be focused on the total test score analysis. In this analysis, a significant trials main effect was found, that is, posttest scores (total raw score) were significantly greater than pretest scores. This result would seem to lend credence to explanation 1. However, it is conceivable that a total test score Groups x Trials interaction was masked by the dissimilar general configurations of the subtest score interactions. The reader is at this point encouraged to draw his own conclusion.

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# INTERNAL READING FLEXIBILITY PATTERNS AMONG UNIVERSITY UNDERGRADUATES

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## ABSTRACT

The concept of reading flexibility or rate versatility is well established in the literature. However, attempts to measure flexible reading behavior using gross reading rates (inter-article flexibility) and material difficulty have had limited success. The problem of the research concers Ranking and Hess's method of measuring internal or intra-article reading flexibility. The purpose of the study was two-fold: (a) to describe existing patterns of internal reading flexibility among college freshmen, and (b) to determine the affect of training in selected reading skills on reading flexibility behavior.

Procedures utilized in the study for measuring intra-article flexibility were adapted from a study reported by Rankin and Hess in 1970. The design of the study was developed to overcome the acknowledged limitations of Rankin and Hess's research.

Subjects of the study were 34 college freshmen from five Educational Psychology classes. Subjects were randomly selected for assignment to treatment groups. All subjects were pre and posttretment tested using Personnel Research Associate's *Scale 3* or *Reading Adequacy READ Test* to develop flexibility coefficients. Subjects in the experimental group were treated utilizing the author's *Flexibility Module* for one week. The module contained both theory and practice of rate versatility techniques. Control group subjects pursued regular individualized classroom assignments.

Research results failed to find a significant relationship between rate of reading and readability of material. There was no evidence of positive reading flexibility among the subjects during pre- or posttreatment research phases. However, based on an analysis of the subjects' reading rate patterns and evaluation of the testing procedure, specific recommendations for future intra-article flexibility research are needed. Some possibilities are:

1. Research leading to the development of valid and reliable assessment instruments. As yet reading flexibility tests have not identified known populations that allegedly have reading flexibility. It would seem that the identification of such populations is needed for instrumentation validation. In addition, research has not yet established (a) a flexibility test for the college-student population, (b) the optimum length of readability passages within a single article and (c) the methods which might be least disruptive for measuring time lapses.

2. Another area of concern for future research involves that of the relationship between subject variables and development of positive reading flexibility. It may be found that personality characteristics influence the subject's ability to be a flexible reader.

3. The final area of interest for future research is that of the training of flexible reading behavior. Research must concern itself with development of instructional strategies; use and kinds of reinforcement and motivational devices; and the role of the instructor in producing flexible reading behavior.

In view of the precarious nature of the existence of the construct of reading flexibility, it would appear that extensive research is warranted with regard to the above stated concerns. Only through continued research can effective procedures for measurement and development of reading flexibility be attained. Strategies for coping with problems of information explosion and increased reading demands must be found.

# A ONE–YEAR READING METHODS SEMINAR FOR ADULT BASIC EDUCATION TEACHERS

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Like a good many large universities, the University of Wisconsin-Madison has no actual department or teaching area of adult reading. "Theory" courses in the area of adult education are taught by the Department of Continuing and Vocational Education, while "Methods" courses in reading are taught in the Department of Curriculum and Instruction.

Because neither department offers a true "program" in adult reading, two things occur, neither or which is conducive to improving adult basic education (ABE) instruction in the field. First, students at Wisconsin who are preparing for the professional specialty of ABE have no "home" department that offers a planned course sequence of methodology in basic skill areas such as reading. Secondly, professionals already pursuing ABE teaching careers have no highly visible or responsible university source of assistance for inservice training.

The state of Wisconsin does have, however, a strong state-agency based ABE program through the Department of Public Instruction, and at times those associated with the state ABE agency are able to draw together people and resources which have some impact on ABE in Wisconsin. The program described in this paper is one such cooperative effort.

## Funding for the Program

A state Adult Education Agency grant to the University of Wisconsin-Madison Department of Continuing and Vocational Education and the Department of Curriculum and Instruction provided funds for a university professor, a teaching assistant, materials for those who would enroll in the program, a demonstration library within the university's Instructional Materials Center, and secretarial time and duplicating.

## Program Goals

The major goal of the program was to upgrade Wisconsin ABE teachers' abilities to recognize and deal with reading problems within the context of their ABE teaching roles. Thus, the primary direction of the program was university to student and the content was reading methodology. However, because we believed methodology does not exist in isolation from the populations for which it is designed, a second goal of the program was to tailor the basic concepts underlying reading methodology to the needs of ABE teachers who participated in the program and to assess the relative success of such a modification. In this respect, then, the direction of the program was student to university. The information we gathered as a result of our goal is reported below.

## Administrative Considerations

To facilitate enrollment, credit-granting, and so forth, the program was offered through the regular university timetable of courses as two two-credit sections (one for fall term and one for spring term) of "*Seminar in Reading*", a 900-number advanced-seminar course which allows the instructor to fix his or her own emphasis and meeting-times and places. The credit granted for the course can be claimed as undergraduate, graduate, or "special," depending upon (a) whether the individual student is or is not admitted to Graduate School, and (b) the level of fees paid for enrollment. All participants thus enrolled at the University of Wisconsin-Madison as undergraduate, graduate, or special students.

## Format of the Course

The schedule chosen for the course was five weekend meetings, each beginning at mid-day on Friday and continuing through late Saturday afternoon. Three meetings were held during the fall semester and two during the spring semester, with the final meeting being held in May 1974. Fifteen ABE teachers enrolled in the class, and all participated during both semesters.

Overall, the course was planned to concentrate on activities, demonstrations, and applications: theoretical considerations which were presented would immediately be reinforced by some sort of application-level exercise. The general course outline for the five weekends was as follows: *Weekend one* The emphasis for the first weekend was on how *children* learn to read and how various approaches for beginning and developmental reading may affect the adults that ABE teachers later see. The weekend's activity was the most "theorectical" of the five but was deemed by the two instructors to be an essential first step. *Weekend Two* The second weekend was spent considering testing, placement, and diagnosis in reading. However, to ensure interest in the sometimes-less-than-exciting statistical details of test theory and test construction, the farily volatile topic of IX and its measurement was chosen as an example illustrating test theory. The second phase of this weekend was participation in a workshop on evaluation in reading which was sponsored by the local International Reading Association (IRA) Council. Subsequent discussion focused on an examination of the assumptions underlying reading testing. *Weekend Three* The weekend was devoted primarily to reading pedagogy. The teaching of sight vocabulary, word identification skills, sentence and paragraph reading, and reading comprehension in general were demonstrated through activities and exercises which simulated – at the participants level – the various topics. *Weekend Four* Weekend four was used to describe and demonstrate readability theory, selection of teaching materials, and matching of individual ABE students to appropriate reading instruction materials. Also, study-reading techniques useful to ABE students preparing for GED examinations were demonstrated and discussed in a participant-level simulation. *Weekend Five* The topics dealt with improving reading rate (for "better" adult readers), flexibility in reading rate, and critical reading. Also, a fairly extensive evaluation of the two-semester program was completed.

In addition to the topics considered during each session, two strands of activities were pursued throughout the year: (1) the administration of adult-level reading tests to the participants, under regular administration conditions, to acquaint them with these instruments, and (2) the development of informal assessments of reading ability. This latter activity centered primarily on the development of informal reading inventories (IRI). The content of the reading selections used in these inventories to assess reading ability was chosen from local reading matter such as the area newspaper, the union newsletter, and trade magazines. Once the choice of material was completed, traditional IRI procedures were followed in constructing the inventories.

## Evaluation

As noted above, a fairly extensive evaluation of the course and its components was carried out. While one aspect of this evaluation was

## TABLE I

## PARTICIPANTS' MEAN RANK-ORDERINGS OF TEN TOPICS OF STUDY IN AN ABE SEMINAR-SERIES

| Topics | Mean Rank-Offerings | Overall Group Rankings |
|---|---|---|
| Discussion about the Nature of the Reading Process | 6.7 | 8th |
| Descriptions of the Major Approaches to Beginning Reading Instruction | 3.6 | 3rd |
| Presentation of word-Attack Strategies and Procedures | 5.5 | 6th |
| Suggestions for Diagnosis, Placement and Evaluation of Readers | 3.3 | 2nd |
| Presentation of Strategies for Teaching Comprehension Skills | 5.2 | 4th |
| Presentation of Study Techniques and Strategies | 5.9 | 7th |
| Techniques for Readability and Rate-Flexibility | 9.5 | 5th |
| Ideas for Teaching Speed-Reading and Rate-Flexibility | 2.6 | 10th |
| Activities Illustrating Methods, Materials, and Classroom Teaching Procedures | 2.6 | 1st |
| Ideas for Teaching Critical Reading | 7.4 | 9th |

the traditional sort of "rating" of the instructor and the course, a second, and in our opinion more important, aspect consisted of participant perception of the relative worth of the various components within the course to ABE populations.

In order to assess this within-course-perceived-utility, participants were asked to *rank-order*, in terms of usefulness, the ten areas of emphasis within the course. The results of the rank-ordering procedure are presented in table 1.

With the exception of the topic of Approaches to Reading Instruction, the pedagogical topics were clearly ranked as more useful. Kendall's Coefficient of Concordance was employed to consider the statistical significance of intra-group agreement. The results of this analysis suggested the agreement was highly correlated ($p < .001$).

A third step in the overall evaluation of the program seemed to substantiate the results of the rank-ordering procedure. When the participants were asked to allocate 100 points among the five general areas of concern which constituted the course, the mean weightings derived were as follows: (1) application exercises, 26.25; (2) skills work, 22.9; (3) professional awareness, 21.25; (4) materials, 17.1; and (5) theory, 12.5. (Intra-group agreement was statistically significant at $p < .02$).

## Conclusions

On the basis of the course evaluation, several conclusions were drawn. First, an intensive seminar-like course conducted over an academic year appears to be a useful vehicle for providing inservice assistance in reading methodology to ABE teachers. Secondly, ABE teacchers representing several levels of formal educational background, from less than a bachelor's degree to advanced-degree candidacy, can in fact work together in such a setting and find it personally and professionally productive. Third, among the population of ABE instructors who participated in the program, there is a great deal of homogeneity of perceived usefulness of various topics in reading methodology. Finally, cooperation between state departments of education and teacher training institutions can lead to programs through which inservice training in reading methodology for adults occurs.

It must be pointed out, however, that in our view this type of program remains stop-gap only. As Ames (1969) has pointed out, ABE teachers ought to be provided the opportunity to achieve competencies equal to those which remedial reading teachers in the public schools possess. However, until such time as a greater commitment of money, time, and other resources is made to ABE, programs such as the one described herein may bridge the gap between one-time reading methods workshops and college or university level reading methods courses designed for elementary education majors.

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# READING PROGRAMS IN ILLINOIS HIGH SCHOOLS: THREE COMMENTS

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During the academic year 1973-74 a one page questionnaire was sent to the English department chairperson of each of 664 Illinois high schools, that is, all the public high schools which lie outside the city limits of Chicago. Although the primary purpose of the survey was to ascertain which reading tests were most frequently used, the results of the survey seem to provide tentative answers to not one, but three questions. What is the extent, location, and structure of reading programs? How do chairpersons of high school English departments view the need for and structure of reading programs? Which tests are used for screening diagnosis?

## What Is the Extent, Location and Structure Of Reading Programs In Illinois High Schools?

The first three questions to be answered by the English department chairperson were: Categorize your school as mostly rural, town, urban or suburban. Do you have a reading program? and At which grade levels does it operate?

There are three reasonably important findings based upon returned data: (a) Of the schools which responded 41.5% had reading programs. (b) Those schools which were classified as suburban comprised almost half of all schools claiming a reading program. Specifically, 60 of the 131 schools (46%) claiming reading programs were suburban. Furthermore, an overwhelming number of the schools classified as suburban had reading programs (60 of 71 or 84%). (c) The frequency of reading programs among the high schools which were classified as rural was in marked contrast to those classified as suburban schools. Specifically, 160 (61%) of the responding schools checked the category "rural", but of these only 30 (19%) had a reading program.

The two findings about the structure of the programs based upon the data were: (a) The most popular structure of a reading program was one which reached all grades, 9-12, inclusive. Specifically, 69% of the programs reached grades 9-12 and only within the category "town" did the percentage of schools employing a grade 9-12 reading program fall below 50%. It is also apparent that the suburban schools used this structure almost exclusively (93%). (b) An obvious characteristic of the more limited reading programs of the other three categories of high schools – rural, town and urban – was that grades 9 and/or 10 are reached more frequently than grades 11 and/or 12. Specifically, grades 9 and/or 10 are reached in 82% of the remaining programs while grades 11 and/or 12 were reached in but 50% of the programs.

### How Do Chairpersons of High School English Departments View the Need for and Role of Reading Specialists?

Of the 315 responses to the question "Do you consider the services of a reading specialist desirable on the senior high school level?" English department chairpersons answered "Yes" 303 times (96%), "No" 10 times (3%), and "undecided" two times (1%). In addition, 143 (46%) chairpersons commented on their answer. Although it was exhilarating to find an overwhelming acceptance and indeed demand for reading specialists, it seemed logical to ascertain what reasons, if any, were given by the few who rejected the use of a reading specialist.

The 10 negative responses to the "specialist question" were therefore inspected. It was found that 8 of the 10 negative responses contained four justifications. Three justifications were of the "it-should-be-done-earlier" type. An additional four were essentially "I feel that only in a very few cases can reading be improved at the secondary level." The eighth justification follows. Draw your own conclusions.

> #45. No! Most of them are "testers", not teachers. The English department is then left with the burden of teaching the poor readers no matter what the source of their problems in spite of the fact that the so-called reading specialists have often special work (credit hours for which they are paid) in maladjustment problems and psychological hang-ups. Better that I hire another English teacher for help.

Next to better understand what the chairpersons desired of a reading specialist, the remaining 135 responses which contained comments were placed in three categories: specialist's role, elements of a high school program, and others.

The 20 responses which contained ideas about the role of a reading specialist in the high school indicated that the chairpersons did not want "just a consultant," but, at a minimum, a remedial specialist who could "handle the L-D students and teach basic reading skills" or "do the testing and recommend a program." In addition, it was made clear that "the reading specialist at the high school level is more a facilitator than a teacher. Concern is as much with changing attitudes about reading as with improving skills." When a chairperson developed a more elaborate role for the reading specialist it became apparent that "a qualified reading specialist is desirable both to work directly with students and conduct inservice sessions with staff." The most elaborate role ascribed to a reading specialist is to serve as a curriculum and program coordinator, a diagnostician, and a specialist for individual teachers and students. The comments seemed to lead to the conclusion that the reading specialist's role in remedial reading is teaching students, while in developmental reading it is one of teaching teachers, not students.

An additional seven responses provided ideas about the structure of the reading program in the high school. The suggested program elements were that the high school reading program (a) should be a continuation of the grade school and junior high school programs, (b) should be both developmental and remedial, (c) should develop college reading skills, (d) should be elective, (e) should not be a "dumping ground" for undesirables, and (g) should utilize more than one teacher.

## Which Tests Are Used for Screening and Diagnosis?

From the 315 responses received it was determined that at least 38 different group type reading tests were in use. The 10 most frequently named tests are listed in Table 1 along with the number of different high schools which claim to use each test.

Since some schools named more than one reading test the percentage column of Table 1 is not totaled. (It should be noted that none of the

### Table 1

**Number and Percentage of High Schools Using the Ten Most Frequently Named Group Reading Tests**

| Reading Tests | High Schools Using | |
|---|---|---|
| | N | % |
| Nelson-Denny Reading Test | 69 | 22% |
| Gates-MacGinitie | 68 | 22% |
| SRA Reading Achievement | 42 | 13% |
| Iowa Tests of Educational Development | 28 | 9% |
| Iowa Silent Reading Test | 26 | 8% |
| Diagnostic Reading Tests-Survey Section | 22 | 7% |
| Illinois Statewide | 19 | 6% |
| Nelson Silent Reading Test | 17 | 5% |
| Sequential Tests of Educ. Progress | 15 | 5% |
| California Reading Test | 13 | 4% |

other 28 tests were named in more than eight responses and most were named but once). In this instance, it seems that the educational folklore I heard was correct: the Nelson Denny is the most widely used reading test. Of course, not by much, and there may be a change coming, but note that the almost equally old Diagnostic Reading Tests-Survey Section is still popular.

Information was also sought about tests used in remedial situations. Only the following tests were claimed to be in use in more than two schools, and none were named in over 3% of the responses. The informal reading inventory was noted in 9 responses; the Huelsman Word Discrimination Test, 8; the Stanford Diagnostic Reading Test, 8;

the Wide Range Achievement Test, 7; the Durrell Analysis of Reading Difficulty, 6; the Gray Oral Paragraphs, 5; the Boyd Phonics Test, 4; and Informal Cloze Tests, 4. In addition, the Wepman Auditory Discrimination Test was mentioned in 5 responses, the Keystone Telebinocular Vision Screening, 5; the Peabody Picture Vocabulary Test, 4; and the Wechsler Intelligence Scale for Children, 3. The first four tests are not reading tests but represent correlate tests which have been a traditional part of screening and diagnosis. These tests are the only tests mentioned in more than one response. Twelve others were mentioned.

It should be noted that four tests which occur on the diagnostic test list can be attributed to one-time members of the University of Chicago faculty and/or staff: the Huelsman Word Discrimination Test, the Gray Oral Paragraphs, the Boyd Phonics Test, and the Wepman Auditory Discrimination Test. The influence of a particular institution upon evaluation in high school remedial programs might be argued, specially since it was noted that a large proportion of the responses were from suburban schools, a majority of which, it might be assumed, were suburban Chicago schools.

It seemed fair to conclude that although there was a wide range of group reading tests used in high schools, the Nelson-Denny, the Gates-MacGinitie, and the SRA, which when totaled were used in over 50% of the responding schools, were the most popular tests in the high schools of Illinois. As regards other tests used in a remedial setting, the extremely low response percentage rather than the type or name of the tests seems to be the most glaring fact. Whether high schools do not test extensively or chairpersons of English departments did not take time to obtain and provide the desired information is debatable.

# THE UTILIZATION OF CONTEXTUAL INFORMATION BY HIGH SCHOOL STUDENTS

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Reading competence seems to depend on the individual reader's ability to make effective use of contextual information. An active analysis in predicting upcoming words is at the root of several fruitful approaches to understanding the reading process (Neisser, 1967; Liberman, 1970; Geyer, 1971; Smith, 1971; Kolers, 1971). The use of contextual information for word identification decisions has been documented in competent readers (Morton, 1964; Forster, 1970; Klein & Klein, 1973a). The development of context use in word identification decisions has also been documented across age groups (Klein, Klein, & Doris, 1973; Klein, Klein, & Bertino, 1974). The present experiment investigates the relationship between individual reading competence and utlization of contextual information in word identification decisions by high school students.

The paradigm employed was the word boundary (WB) task (Klein & Klein, 1973b). The task measures word identification speed as a function of context. Subjects are given passages with contextual features but with words run together, and their task is to draw slashes between word units so that there are no extra letters or nonsense words. An example follows:

n o w t h e b i r d f l e w o u t o v e r t h e l a n d

Subjects are also given passages with randomly arranged words, which serve as a baseline for general performance characteristics of subjects. An example of a word boundary task with no context follows:

a f t e r f e w f o r b e g a n t h e w h e n s o h e s n o w

This experiment examines two questions: (a) to what extent do high school students use context in word identification decisions? (b) What is the relationship between an individual's reading competence and his use of context in word identification decisions?

## Method

### Subjects

The subjects were 147 students from a suburban Detroit high school. Three students were dropped for failure to follow instructions. The subjects were tested in English classes and either remedial reading workshops or regular literature classes. Each of the seven classes used included students from 9th to 12th grade level.

### Materials

Four 200-word prose selections of high school reading level were used to form the context passage. Words requiring capitalization were eliminated, as was all punctuation except commas and periods. For each context passage, a random passage was developed by randomly ordering the 200 words. For each selection, there was a context form and a random form using the same words. All eight passages were prepared for the WB task by deleting punctuation and including an extra space after each letter with no additional spaces between words. Each line began and ended with a complete word.

Each test booklet contained two random and two context passages. Each passage in a booklet came from a different prose selection and appeared on a separate page. Half of the booklets were in an RRCC order, and the other half in a CCRR order to counterbalance practice effects. A 4 X 4 Latin square was used to assign the order of the selections so there were eight booklet types. Each booklet had the same cover page, with a short sample exercise of random words.

### Procedure and Instructions

The subjects participated during their English class. Booklets were distributed randomly, and the task was described. The students were instructed to work from left to right and from top to bottom, drawing slashes between words as quickly as possible crossing out slashes drawn incorrectly. They were assured that there were no non-words and that accuracy was more important than speed. The sample exercise was then completed and questions answered. Each of the four trials was initiated with a start signal. Ninety seconds were allowed for each trial, with a 30 second intertial interval.

### Measures

The measures used were the number of English words separated by slashes, and the number of errors (non-words) for each of the four trials. For each student, the mean number of correct words for the two random and the two context passages as calculated.

Several other measures were collected. The Co-operative English Test for Reading Comprehension, including vocabulary level of comprehension, and speed of comprehension subtests, were available for 105 of the students. Otis IQ scores were available in school records for 97 students. Teacher ratings were also obtained for all participating students. A scale from superior reading ability (5) to minimal reading skill (1) was used.

## Results

The first questions concerned the utilization of context in word identification by high school students. The two presentation orders, CCRR and RRCC, did not differ significantly, nor did they show any significant interaction with the main effect. A non-significant practice effect of 1.3 words per trial was obtained. The two presentation orders were combined for analysis. The mean number of correct words on the random passages was 36.3 compared to a mean of 51.5 words for the context passages. This proportional increase of 43% was significant, using a repeated treatment analysis of variance ($F(1,143) = 297.76$, $p < .001$).

Based on Hays' (1963) calculation of omega squared ($w^2$), the independent variable of contextual information accounted for 29% of the total variability of the students' responses when the subjects were examined as a group. When differences between subjects were ignored, context utilization accounted for 65% of the subjects' performance variability on the task. (The measure of within-subject variability accounted for is obtained by substituting the within-subject subjects for the total subjects in Hays' formula for $w^2$). The students showed high levels of context use in the experimental situation.

The second question concerned the relationship between individual reading competence and context utilization for word identification. Initial support for such a relationship comes from the proportional increments from random to context passages. For the regular literature and remeidal workshop classes, these are 48% and 38% respectively. A direct relationship between WB performance and measures of reading competence comes from examination of individual differences. Individual measures of context use were obtained by normalizing scores within each booklet type; this accounted for any booklet differences. To compare context use, independent of extraneous variables, to the scores on the Co-operative English Test for Reading Comprehension and teacher ratings, a context use factor (CX) was obtained. This CX factor reflects performance on the context passages, independent of the extraneous variables reflected on the random passages.

**Table 1**
**Relationship between context use (CX), teacher ratings (TR), Co-operative English Test for reading comprehension scores on vocabulary (V), level of Comprehension (Lc) and speed of comprehension (Sc), and IQ, with the N indicated for each measure.**

| | N | TR | V | Lc | Sc | IQ | CX |
|---|---|---|---|---|---|---|---|
| TR | 144 | 1.00 | .264 | .399 | .528 | .426 | .471 |
| V | 105 | | 1.00 | .599 | .615 | .560 | .288 |
| Lc | 105 | | | 1.00 | .844 | .559 | .433 |
| Sc | 105 | | | | 1.00 | .612 | .497 |
| IQ | 97 | | | | | 1.00 | .329 |

$r = 21, P < .01$

The r[illegible]nships between the CX factor and the various measures of reading abi[illegible] presented in Table 1, a correlation matrix for the CX factor, the [illegible]bulary, level of comprehension, and speed of comprehension su[illegible]s of the Co-op reading test, and teacher ratings of reading competence. Otis IQ scores are also included. The mean IQ for the 97 students with IQ data available was 102.9. Since IQ and Co-op scores were not available for all students, calculation of the CX factor was performed independently for each measure, and the number of subjects for each measure is also included in Table 1.

All of the relationships reported in Table 1 were significant, all but two beyond the 001 level. The CX factor correlated higher with the level and speed of comprehension Co-op scores, .50 and .43, than with the vocabulary scores, .29. It also correlated highly with teacher ratings, .47. Context use, as measured by the CX factor, therefore accounted for between 17% and 24% of the variance for the measures of reading competence employed. The IQ measure correlated significantly with all of the measures of reading but showed a lower correlation with the CX factor than with the Co-op scores or the teacher ratings. An analysis of errors revealed that the results were not due simply to a speed-accuracy trade-off.

Relationships were obtained between the CX factor and the subjects ages and grade levels. The correlation between age and the CX factor was -.01, while the correlation between trade and CX factor was .096. Neither of these correlations was significant.

## Discussion

These data demonstrate that high school students show high levels of context use in word identification decisions, and the data are consistent with earlier work (Klein & Klein, 1973a) with college-aged subjects. The proportional increment of context over random scores was 47% for the college students, compared to 43% for high school students in the present study (48% for the students in the English literature classes). The $w^2$ estimate of within-subject variance accounted for was 67% for college students, compared to 65% in this study. This suggests that the use of contextual information with this type of material is as powerful in high school as in college-aged students. It must be noted, however, that in the present study these were two random and two context passages per subject, while the data for college students were based on only one random and one context passage per subject. The high school student in the present study may have shown higher relative $w^2$ values in part due to this procedural variable, but it is still unlikely that context use increases with age by high school age. The extremely low correlations between the CX factor and age and grade suggest that there are essentially no increases in context use even during the high school years. In addition, Klein (1974) directly compared WB performance of 9th graders and college students and found no differences in context use.

The data support a relationship between effective use of contextual constraints in written material and superior reading performance. The high correlations obtained in this experiment between the CX factor and the measures of reading competence indicate that in high school readers, the ability to use contextual cues is one important aspect of reading ability. (Actually, the obtained relationships are probably underestimated). The conversion of WB scores to *z* scores based on samples of less than 20 may have introudced a certain amount of error into the analyses. Similarly, the use of Co-op test scores that were up to four-years-old may have further reduced the relationships found. The fact that strong correlations were still obtained serves to emphasize the importance of context utilization in reading performance).

The results support recent theoretical analyses of reading which stress an active analysis by synthesis approach. Such models depend on the reader's use of the contextual constraints composed by prior material in a passage. The present experiment demonstrated that high school readers make effective use of such contextual constraints to facilitate performance in a simple word identification task. The extent of this use is related to their reading competence.

The nature of the context use (CX) factor is still in the realm of speculation. However, contrasting the tasks for the random and context passages, several hypotheses are suggested concerning: (a) differences in familiarity with the syntactic and semantic structure of the lanaguage; (b) differences in effectively allocating memory capacity to maximize the range of alternatives that can be scanned; (c) differences in automatic recognition of word units (see LaBerge and Samuels, 1974) for allocating a greater amount of memory capacity to higher order analyses; and (d) differences in convergent thinking operations for generating optimal predictions about upcoming words. Additional research is needed for a more specific analysis of the components of context utilization in word identification decisions.

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# AN HYPOTHESIS FOR IMPROVING A SCHOOL'S READING ACHIEVEMENT

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The hypothesis on how to improve a school's reading achievement which will be developed in this paper can best be introduced by drawing upon an experience a reading expert had with an elementary school principal who was seeking advice about a reading program the faculty members of his school wanted to purchase for $39,000. They believed this program would improve their school's reading achievement scores because the program emphasized reading skills, particularly word recognition skills -- just what they thought their students needed.

The expert recognized that the faculty members were implicitly explaining that it was not their instruction but lack of appropriate materials that was responsible for low reading achievement in their school. But he did not analyze the faculty's diagnosis and suggested remedy, nor did he directly answer the principal's question. Instead, he told the principal about three outstanding reading programs and let him draw his own conclusions. The reading expert knew two of the programs firsthand and had discussed them with their directors, Manning (1973) and Cobbley (1973). The third appeared in a journal article, and the reading expert had learned more about it in a conversation with the article's authors, Samuels and Dahl (1971). He summarized these elementary school programs and then abstracted their common characteristics.

The Minneapolis inner city school's Title I project can be characterized as a basal reader program supplemented by the school district's own publishing house and a hierarchical system analogous to baseball's "farm system" for training teacher assistant, student teachers, teachers, and consultants. Although the causal conditions have not yet been ascertained, it appears that these components, all working together, have elevated reading scores in Minneapolis's inner-city schools to a point above average on a standardized test's national norms.

This is the way the project works: a basal reader, the American Book Company's series, was already in use in Menneapolis schools when the

Title I project began. Although this basal reader was not the one which would have been selected by the staff of the project, it was retained so that the children would not have to become familiar with a new series. Supplemental materials were then constructed and published for the entire series so that teachers would not have to spend time dittoing their own supplemental materials.

Teachers who wanted to obtain the supplemental materials, delivered within 24 hours, had to take an inservice training course. The course consisted of a series of audio tapes, developed by Manning, which taught the teachers how to teach each page of the basal reader. Those teachers who performed extremely well became reading consultants attached to the inner-city schools. Manning also taught the preservice course which trained students how to teach the American Book Company's basal reader series. These students served as teacher assistants and later as student teachers in Minneapolis's inner-city schools. The best student teachers were then recommended for positions in the inner-city schools. Thus, a "farm system" of teacher assistants, student teachers, teachers, and consultants was created. All members of this system were trained to provide a system of reading instruction based on a single basal reader series, supplemented by materials delivered on a daily basis. Since all members of the system were trained on the same basal reader series and the same method of instruction, there were no conflicts over materials and methods of instruction among members of the team.

Another system of instruction, with different methods and materials, was established in Cobbley's school in Las Vegas. Cobbley had experience as a teacher trainer at the university where she had earned her doctoral degree. Subsequently, as an elementary school principal, she preferred to hire young, inexperienced teachers and train them to teach reading in her school. The program centered on the Houghton-Mifflin basal reader but departed from it in two ways. First, all students at every grade level had oral reading first period. Although Cobbley was aware that a switch to silent reading as early as possible was the conventional wisdom for instruction in reading, she nevertheless insisted upon oral reading. She wanted the students to read aloud and to be accurate in doing so. Second, silent reading instruction occurred in the last period each day, when all students, beginning at the first-grade level, had library reading and wrote reports, usually on social studies or science topics.

Cobbley's school is known as a school in which almost all children are reading at or above grade level. Her school also enjoys a reputation as a "good" school, a school with well-behaved children. Frequently officials and visitors to her school credit the high reading achievement to the "goodness" of the students, but Cobbley rebuts this explanation by pointing out that her students come from a wide socioeconomic spectrum, including homes with dirt floors. Furthermore, her "good" students had acted up for an upper grade teacher who had been assigned to her school and had not gone through the training program. Almost needless to add, this teacher is no longer in her school. Cobbley now puts down all such superficial explanations that **her** students are "good" children with the rejoinder that **all** children are good.

An entirely different type of curriculum exists in a Title I school located near the Kansas City, Missouri, airport, reported Samuels, who had been asked by Evaluators of Compensatory Education to visit the school and determine why the primary grade pupils in this 99% black school were achieving so well.

Samuels discovered that the school was located in a ghetto neighborhood feared even by cab drivers because of its high crime rate. Touring the school, Samuels found all the teachers were visibly accountable for their instruction: Upon the wall of each room was a progress chart listing all students in the room on one side of a chart and all the reading skills taught in the programmed instruction curriculum on top of the chart. Daily entries were made to plot each child's progress. Although three teacher aides were in each room, Samuels could not find any difference between their activities and the teacher's instruction with the children. The aides had been trained by the classroom teacher and a reading consultant hired with federal funds to work with the teachers and the aides. Samuels also learned that students were given tokens for behavior modification.

Discussing the program with the school's principal, Samuels learned that the administrators, from the superintendent to the schools' principals, believed ghetto children could learn to read and were dedicated to improving achievement in all of Kansas City's ghetto schools. They decided that teachers whose students did not perform well in ghetto schools would be transferred to schools which had different socioeconomic conditions that might enable them to contribute more to student achievement. Teachers who transferred into a ghetto school and survived because their students achieved joined the ranks of the "good" teachers in the school. Consequently, the morale among students and the mixed black and white faculty reached and remained at a high level, partly because the faculty also worked to develop racial pride. Presumably relatively high achievement and morale at the school resulted in excellent relationships with the community.

What are the common elements among these programs? They all have a system of reading instruction, high staff morale, confidence of principal, parents, and professional staff in the curriculum and in one another, and a faculty trained and competent in materials and methods of instruction used in the school. Successful achievement in these schools could not be attributed to a particular set of materials or to a particular approach to reading instruction because, in all three cases, high achievement was obtained with different materials and different approaches to reading instruction.

The consistency in these three examples is in marked contrast to the high frequency of innovation, resulting in near chaos, in reading curriculum and instruction that occurred in some schools in the 1960s. The decade ironically began with the well-known First Grade Studies (Bond & Dykstra, 1967) which found greater variation within than among methods. In short, no one method made the difference in general reading achievement.

Since many teachers had implemented each method one hypothesis was that the teacher, not the method, was the causal factor for the range of achievement in each method (Artley, 1972). Unfortunately, this hypothesis was not tested in the original series of studies but was formulated after these studies had been reported. However, the three examples which have been discussed suggest that this hypothesis is inadequate. It is not the teacher alone, although the teacher alone can make a significant difference for children within a particular school year, but the teacher and the entire faculty, including the principal, who systematically utilize a system of instruction in which they become competent and in which they have confidence. This is what seems to make the difference in achievement. Since the faculty members of each school continue to work on the same system, they can improve and develop the system of instruction so that it works well for the school. Individual differences among students tend to be satisfied because there is a sequence to the student's instruction.

The hypothesis to test, then, is that there will be a cumulative and significant difference in achievement when comparisons are made between a school in which there is a system of reading instruction and a faculty trained in this system and a control school which does not have a system of reading instruction. This hypothesis, of course, does not overlook the necessity of having valid methods and materials. But, given a valid program, the hypothesis asserts that its systematic implementation is what makes the difference. This hypothesis appears to be "common sensical" but, if it is, the question is, Why are not all schools applying common sense to their reading instruction programs?

Although the principal who consulted the reading expert had a doctor's degree in school administration and had led the expert to believe he understood what he had heard and its implications, he apparently did not follow the expert's advice. Subsequently, he recommended to his school board the purchase of the same reading program he had originally asked about. Even though the expert had pointed out that it was not the materials alone which made the difference and that there already was an excellent basal reader series in his school, the principal still wanted to spend $39,000 for an entirely new program with a different approach to instruction. The school board approved his request but limited it to $16,000 for the primary grades with an evaluation to be made at the end of one semester.

Instead of training his faculty to use the system of instruction already on hand, the principal preferred to buy the new program and add it to the old one. Thus, faculty and students also had to learn how to use this integrated program and how to achieve its objectives. Apparently more than knowledge enters into a principal's decision-making processes.

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# THE RELATIVE EFFECTIVENESS OF THE SQ3R METHOD, A MECHANIZED APPROACH, AND A COMBINATION METHOD FOR TEACHING REMEDIAL READING TO COLLEGE FRESHMEN

## VERA MELLOTT DIGGS

### ABSTRACT

The purpose of the investigation was to determine which of the following approaches was most effective for teaching reading rate, comprehension, vocabulary, and total reading performance to remedial college freshmen: (a) SQ3R Method, (b) a Mechanized Approach, (c) a Mechanized Approach followed by SQ3R Method, (d) a SQ3R Method followed by Mechanized Approach, or (e) a control group which received no teaching of reading. The 80 subjects enrolled at Anne Arundel Community College were divided into the four experimental groups (64 students enrolled in required reading course, $N = 16$ in each group) and a control group (not enrolled in a required reading course, but with similar ACT scores, $N = 16$). Experimental subjects were randomly assigned to the four experimental groups.

Pre- and Posttest data were secured for all groups. *Diagnostic Reading Test:* rate, vocabulary, comprehension, and total performance; *Davis Reading Test:* level of comprehension and speed of comprehension; *SRA Better Readers:* rate, vocabulary, and comprehension; and, informal tests; ability in English, science social studies.

The results revealed significant main effects for gains in reading rate, vocabulary, total reading performance, and social studies type of reading material. The Duncan Multiple Range Test was used to determine multiple comparisons, and correlations were computed to determine the extent of relationships between dependent variables. A simple one-way analysis of variance indicated the groups did not differ significantly in intelligence; therefore, experimental analyses did not consider this factor.

Results indicated the SQ3R Method followed by the Mechanized Treatment was superior for general vocabulary and for reading rate. The SQ3R Method used throughout the semester was superior for total reading performance, reading of social studies type materials and for vocabularly in context. No teaching of reading was superior to a mechanized approach or a combination method for reading of social studies type materials.

On the basis of findings of the research, it can be concluded that the SQ3R Method is effective for students who need overall reading improvement. Further, students who need improvement in particular areas of reading can profit from a mechanized approach provided they have experienced a systematic method of study first.

# AN INQUIRY INTO TEACHERS' ATTITUDES TOWARD BLACK–DIALECT–SPECIFIC AND NON–DIALECT–SPECIFIC READING MISCUES

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The most recent major trend in reading appears to be toward a conception of reading as a meaning-getting process and away from the position that reading is accurate word calling, a position exemplifed by the informal reading inventory, in which each deviation from the printed stimulus was considered an error. While the proponents of informal inventories advised their users to analyze the type of errors, it was the quantity, not the quality, of these errors which determined a child's instructional reading level.

While concern for meaning in reading has only recently been rediscovered, efforts to improve the reading ability of black students have continued since the early 1960s. The many explanations for the failure of blacks as a group to achieve a satisfactory level of literacy are too lengthy and well publicized to be reviewed here. Language, however, and specifically what has come to be called black dialect has been one of the easier explanations. Goodman (1965) wrote that "the more divergence there is between the dialect of the learner and the dialect of the learning, the more difficult will be the task of learning to read" (p.853).

Concurrent with the emphasis on meaning for all readers, some educators are suggesting that black children might have more success in learning to read if they were allowed to translate the print into their own dialect. Goodman and Sims (1974) reported that "Black dialect speakers frequently read standard English structures orally as black dialect structures" and that "changes made by the subjects were surface changes . . . retained the meaning of the original sentences" (1974 p. 838). They concluded that:

> When students are taught to read in the teacher's dialect, they may have satisfied the teacher's requirement, but may have destroyed for themselves the idea that the goal of reading is meaning. If the teacher and the reader concentrate on an oral production in reading which is not in the reader's mother tongue, meaning for the most part becomes the fatal victim (p. 839).

A current trend in diagnosis is the use of a miscue analysis. Miscues, unlike errors, are analyzed rather than tabulated. The tester asks many questions about each miscue. A most critical question is: Does the miscue change the meaning of the printed text?

While there seems to be some support among reading theorists and researchers for the notion that non-meaning-changing miscues should not be corrected, this "liberal" position may not be as widely held by classroom teachers. The purpose of the research was to measure teachers' concern with meaning by determining their attitudes toward non-meaning-changing miscues. Specific research questions were as follows: What percentage of non-meaning-changing miscues do teachers report they would correct? Are there differences in the percentages of reported correction when non-dialect-specific and black-dialect-specific misuces are compared?

## Methods

The subjects of the study were 75 students enrolled in graduate reading courses during the summer session. Of the 75 subjects, all but 13 had at least one year's teaching experience. During the first week of classes, subjects completed a 20 item *Miscue Attitude Questionnaire* (MAQ). The following directions were given to the subjects:

> Here are some sentences read by some fourth graders who were reading individually to their teacher from a library book. In each case, the students read something other than what was actually printed on the page. If you were their teacher and were listening to them read, would you correct their reading? Indicate by circling *Would Correct* or *Would Not Correct* for each. Please add any comments at the end of this questionnaire.

Of the 20 randomly ordered items, nine items contained non-dialect-specific miscues ( *Sentence:* Yesterday we went to the theatre; *child read:* We went to the theatre yesterday.) Nine items were Black-dialect-specific translations (*Sentence:* Have they gone there? *Child read:* Is they gone there?) Dillard (1972) was used as the source of the black-dialect specific translations. In each of these 18 miscues, the meaning remained essentially unchanged. Two items in which the meaning was changed by the miscue were also included. (*Sentence:* Give me back my monkey: *Child read:* Give me back my money.) These two sentences were included to determine if the subject's decision to correct or not correct was being influenced by the meaning-changing nature of the miscue. Subjects responded with a 97%

"would correct" rate on these two items. Responses to these two items were not considered in any further data analyses.

At the same time that they were given the MAQ, Ss were also given a second questionnaire which was folded and stapled in such a way that they were unable to see its contents. Subjects were told that they would be completing this second questionnaire later and were asked to put an identifying mark on both the first and second questionnaire. In this way, subjects' anonymity was assured and individual responses on both questionnaires could be compared.

The second questionnaire, Black Dialect Recognition Questionnaire (BDRQ), consisted of 18 items which were the alleged readings, with miscues, of the readers on the MAQ. One week after the administration of the MAQ, the BDRQ was administered. Directions on the BDRQ were as follows:

> Below are some sentences. Indicate by circling the appropriate response if *in your experience* this type of speech is used *mostly by blacks, mostly by whites* or *equally by both.*

Five of the original 75 subjects were absent on the day the BDRQ was administered; 70 subjects completed both questionnaires.

## Results

To analyze the data obtained from administration of the MAQ, the items were divided into black-dialect-specific items ($r = .766; p < .01$) and non-dialect-specific items ($r = .652; p < .03$). The two sets of items were then combined to compute statistics on responses to all 18 items ($r = .584; p < .01$). All reliability estimates were computed using the $KR_{21}$ formula. Table 1 presents the means and standard deviations of *would correct* responses to these groups of items. No test for significance between the mean number of corrections of black-dialect translations (7.42) and the mean number of corrections of non-dialect-specific translations (2.24) was performed because of the magnitude of the difference.

Table 2 presents a list of the 18 items accompanied by the percentage of corrections. The first entry is the alleged reading, and the second is the actual printed sentence.

The data obtained from the BDRQ were scored according to the number of items correctly recognized as spoken "mostly by blacks." Of the nine black dialect items, the mean number correctly recognized was 6.2. "Of the Black items 69% were correctly identified as spoken

### Table 1

### Summary of "Would Correct" Responses to Black-Dialect Specific and Non-Dialect Specific Translation

| Items | Number of Items | Mean Number of Corrections | S.D. |
|---|---|---|---|
| Black-Dialect-Specific Translations | 9 | 7.42 | 2.02 |
| Non-Dialect-Specific Translations | 9 | 2.24 | 2.00 |
| Total | 18 | 9.66 | 3.16 |

*N* = 75

mostly by blacks. Of the non-dialect specific items 2% were incorectly identified as being spoken "mostly by blacks." In order to determine if a relationship existed between recognition of Black dialect items and correction of Black dialect translations, a correlation was computed. The correlation was -.05. There was no relationship between these two factors as measured by scores on these two questionnaires.

## Discussion

Before discussing the results of the study, several limitations must be noted. Expressed attitudes and actual behavior are not the same quantity. Classroom observations of teachers would be required to determine if the expressed intent to correct or not correct were actualized in reality. The study was conducted with a limited population, 75 students enrolled in graduate summer reading courses at a state university in the South. These teachers may not be representative of teachers who do not come back to the university to pursue graduate work.

Table 2

Percent of Corrections on Specific Translations

| Item | Corrections |
|---|---|
| * Here go a table<br>Here is a table. | 96% |
| * After school, I done went home.<br>After school, I went home. | 95% |
| * Is they gone there?<br>Have they gone there? | 93% |
| * He be waiting for me at home.<br>He waits for me at home. | 91% |
| * I had an aunt what moved to Texas.<br>I had an aunt who moved to Texas. | 84% |
| * Time we get there, they be gone.<br>By the time we get there, they'll be gone. | 80% |
| * John run to his mother<br>John runs to his mother | 73% |
| * My borther sick.<br>My brother is sick. | 72% |
| * Put that cat out this house.<br>Put that cat out of this house. | 59% |
| John had a little dog.<br>John had a small dog. | 43% |
| We went to the theatre yesterday.<br>Yesterday we went to the theatre. | 39% |
| She took the money from her pocketbook.<br>She took the money from her purse. | 36% |
| He reads the story out loud.<br>He reads the story aloud | 29% |
| She turned off the car headlights.<br>She turned off the car headlamps. | 24% |
| John went with 'm.<br>John went with them. | 19% |
| Put the butter away, please.<br>Put the butter away, if you please. | 17% |
| I will be home at 5:00.<br>I shall be home at 5:00. | 15% |
| He doesn't see.<br>He does not see. | 3% |

* Speech patterns common to black English (Dillard, 1972)

Acknowledging these limitations, some tentative conclusions can be drawn from the results of the research. Teachers indicated they would correct 83% of the black-dialect-specific translations as opposed to 25% of the non-dialect-specific translations. At first this may appear to be an extremely racist attitude; however, two pieces of evidence mediate against this interpretation.

The correlation between number of corrections of black-dialect-specific translations and the number of such items recognized as being spoken mostly by blacks was -.05. Teachers who recognized many black-dialect-specific items were neither more nor less inclined to correct these items than teachers who recognized few black-dialect-specific items.

The second piece of evidence which argues for some explanation other than racism can be found in the comments written on the MAQ by the subjects. Many subjects commented that they would not correct a child unless the meaning were changed. However, their responses to specific items showed many black-dialect-specific corrections. For example, one subject wrote, "I would not correct the child unless he missed the meaning of the sentence," but her responses indicated she would correct one of the nine non-dialect-specific translations and eight of the nine black-dialect-specific translations. It appears that ignorance rather than racism may explain the great divergence between the correction rate for non-dialect-specific translations and that for black-dialect-specific translations. Simple recognition of items as being used "mostly by blacks" may be useless unless the listener recognizes the equivalence between certain black-dialect and "standard English" statements.

The results of the research could be optimistically interpreted. Subjects' correction rate of only 25% of non-dialect-specific miscues seems to indicate more concern for meaning than for accurate word calling. The fact that 69% of those readings classified by Dillard as being black dialect were recognized by subjects as spoken "mostly by blacks" lends credence to Dillard's hypothesis that the black dialect is a distinct entity. Perhaps instead of ignoring the existence of black dialect, those responsible for teacher training could provide opportunities for teachers to become proficient receivers of the dialects spoken by the children they teach. This would give teachers who "only correct when the meaning is changed" the ability to recognize meaning equivalence. It is possible that in order to provide "equal" instruction, teachers must achieve competence in understanding and accepting the language of the black child equal to their competence in understanding and accepting the language of the non-black child.

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# VOCABULARY DEVELOPMENT

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## ABSTRACT

Unfortunately, many vocabulary materials used at the high school and college levels are ineffective in the areas of motivation and reinforcement of learning. Thus the students who greatly need to build vocabulary are the very ones who fail to become interested in words. What words they do learn are often rapidly forgotten as, because they are learned in a lesson but seldom used by the students. The authors constructed a vocabulary program which would emphasize motivation and retention through a variety of word exercises and word games.

Dale formulated the following levels of familiarity with a word – ignorance of the word, awareness of the word, a general knowledge of its meaning, and an accurate knowledge of its meaning. Believing that instruction in vocabulary might best proceed according to a similar sequence, the authors composed vocabulary materials with exercises designed to familiarize the students with "target" words, impart to them a general knowledge of these words, and give them the opportunity both to make their knowledge of the words more specific and to see the words in relation to other related words.

Word exercises were classified according to levels of the familiarity with a word, as formulated by Dale. The first set of activities were designed to help the student become aware of the word – not necessarily its definition, but its pronunciation and appearance. Learning activities in the second stage were designed to help students gain general knowledge of the meaning of the work. "target words" were encountered in individual sentences and in a story; thus, the student defined the word in context. An accurate knowledge of the word was the goal of the third stage; the activities emphasized word relationships (discovering synonyms and antonyms) as well as learning related words through study or word roots, prefixes, and suffixes. Writing assignments which gave the student the opportunity to use newly learned words were also used at this stage.

# HELPING STUDENTS "STA" IN COLLEGE

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## ABSTRACT

Colleges and universities throughout the nation are facing the challenges resulting from virtually open admission policies. While traditional resources have met the needs of most students, an increasing number of minimally prepared students require additional help in coping with the demands of course work. In the belief that students often feel more comvortable in seeking help from their peers than from faculty, the Student Teaching Assistant (STA) program was initiated in 1972 at the University of Wisconsin-Oshkosh Reading-Study Center to provide highly qualified peer tutors for interested campuses within the University of Wisconsin System.

STA training workshops are held each summer on the University of Wisconsin-Oshkosh campus. Approximately 20 academically able student are selected from the participating campuses for the one-week workshop offering intensive training in study skills and beginning interviewing techniques. The training is given by staff members of the Reading-Study Center and the Counseling Center. Upon completion of their training, the STAs return to their respective campuses which have made a commitment to hire them, furnish them with a place in which to tutor, provide necessary materials, and appoint an advisor to whom they can turn f[illegible]port.

Workshop training in study techniques incorporates the principles of learning and memory into small-group instruction and individual practice sessions. The SQ4R textbook study approach is stressed heavily as an important basic "learning how to leearn" strategy. Much of the training in establishing a helping relationship is presented through IVEY's microcounseling training model. Post-workshop evaluations indicate that the training experiences are well received by trainees and that STAs are being utilized in a variety of settings on campuses throughout the University of Wisconsin System.

# TUTOR–STUDENT SYSTEM DROPOUT PREVENTION MODEL

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## ABSTRACT

The Tutor-Student System Dropout Prevention Model used university students and high school students to tutor potential high school dropouts in reading. The potential high school dropout was operationally defined as a student reading below a fourth-grade reading level. Eighteen potential dropouts were randomly assigned to the experimental group to be tutored for one hour daily for 10 weeks. Pretest and posttest results indicate statistically significant improvement in reading for the experimental group. Measures of attitude, silent and oral reading, hearing capacity, rate of reading, vision, intelligence, and auditory discrimination were taken. The importance of establishing model programs which can be easily replicated is emphasized. The Tutor-Student System in Beginning Reading, which is the basis of the model, is described in detail as are specific procedures for setting up Tutor-student system programs.

# THE EFFECT OF INTEREST ON READING COMPREHENSION AMONG ABILITY GROUPS AND ACROSS GRADE LEVELS

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Students' interests frequently have been cited as a critical factor which enables them to read successfully material which otherwise would have been too difficult for them (Estes and Vaughan, 1973; Fader, 1966; Powell, 1971; Schnayer, 1968). The purpose of the study was to examine the effect of interest on reading comprehension among good, average, and poor readers and across grades four, six, eight, and eleven.

## Hypotheses

Bruner (1968) and Athey (1969) have suggested that as a student's cognitive skills increase and he becomes a more proficient reader generally his tendency to rely on affective factors for successful understanding decreases. Athey has stated that the relationship between reading and affective factors "may be different at different age levels and for different ability groups" (p. 8). Thus, it was determined that the relationship between reading and a specific affective factor, interest, should be explored across ability groups and grade levels.

It was expected that the effect of interest on reading comprehension would be inversely related to overall reading ability. That is, the effect would be greater on the comprehension of students with relatively weaker reading ability than on that of better readers. It was further hypothesized that the comprehension of students at upper grade levels would be less affected by an interest factor than students at lower levels. These hypotheses were examined for significance at the .05 level.

## Interest

Interest is an elusive concept in research because of the variability of interests among individuals. It would have been ideal to identify each student's absolute interests and to determine the effect of those individualized interests upon the comprehension of each student. However, the conclusions of educational research should be applicable to a classroom setting, and few academic situations offer an opportunity for students to become engaged in their absolute interests.

Thus, in this study, interest was treated as a relative concept, not an absolute one.

Compilations of students' interests by Carlsen (1967) and Purves and Beach (1972) indicated that various general interest areas could be identified. Seven such general areas were selected for use in this study. They were: (a) adventure with the central character being a female, (b) adventure with the central character being a male, (c) sports, (d) animals, (e) romance, (f) non-fiction about a scientific or natural event, and (g) non-fiction focusing on some aspect of the social sciences. To maintain these general areas of interest across all grade levels, one passage from each of these areas was chosen for each of the four grade levels. Thus, a total of 28 passages were selected. All seven passages for each grade reflected a readability level commensurate with the grade on which they were used, as determined by the Fry readability formula. The passages ranged from 500 to 2000 words in length, depending upon the grade level for which they were intended; however, the length remained constant within each specific grade.

## Procedures

Prior to conducting this study, 524 students were selected from four schools in Albemarle County, Virginia. Twenty-four students were randomly selected from each of three reading ability groups as grades 4, 6, 8, and 11.

Reading ability was determined on the basis of standardized testing which had been completed within six months prior to this study. The reading scores on the SRA Achievement Text were used for grades four and six; the reading scores on the Sequential Test of Educational Progress were used on grades eight and eleven. Good readers were defined as those meeting one of two criteria: (a) those reading at least one grade level above actual grade placement, (b) those reading one standard deviation above the mean for the grade based on national norms. Average readers were: (a) those within one-half a grade level above actual grade placement, or (b) those falling within one-half a standard deviation of above or below the mean. Poor readers were those reading at least one grade level below actual grade placement, or (b) those falling one standard deviation below the mean for that grade.

An experimenter-designed interest measure of the seven passage on each grade level was presented to the students several weeks prior to conducting the study. The measure included the titles and a two sentence summary of each passage on the designated grade. Each student was asked to rank the passages for his grade level in the order in which he would most like to read them. These rankings were used to determine the high and low interest passages for each student.

Each student was asked to read the two passages he had indicated to be his high and low interest choices. This was conducted on successive days. To control for an order effect, half of the 24 students in each group were given their high interest passage the first day while the other half read their low interest choice. A maximum of 15 minutes was allotted for reading each passage and all but a very few students completed reading their passages within the time limit.

Reading comprehension was measured by 50 item post-reading cloze tests. These tests consisted of three sample segments chosen from the original passages – one from the beginning, one from the middle, and one from the end. Each segment was designed by leaving the first and last sentences intact and by deleting 17 items from the middle and final segments and 16 from the first one. Substantive deletions such as nouns, verbs, adjectives, and adverbs were made at every fifth or sixth word interval, varying only to ensure that only substantive words were deleted. No time limit was imposed on the testing.

A two-factor completely randomized design was used in the study with the differences between the high and low interest scores constituting the dependent variable. The difference scores among the 12 groups were analyzed by a two-way analysis of variance.

## Findings

The two-factor analysis revealed that the effect of interest on reading comprehension differed across good, average, and poor readers. The comprehension of less able readers was significantly more affected by the variance in their interest in what they read than was the comprehension of better readers ($F$ - 8.52, $df = 2/6$, $p = .001$). A Tukey Test for Post Hoc Comparisons was run to determine whether this difference were significant between each of the specific ability groups. The differences between good and average readers, average and poor readers, and good and poor readers were all found to be significant at the .01 level.

The analysis of the data across grade levels indicated that the effect of interest on reading comprehension did not appear to vary in relation to academic maturity as determined by grade level designation. When 4th, 6th, 8th, and 11th grade students were given material on their own grade level, the relationship between interest and reading comprehension did not vary significantly across those grade levels.

Myers (1972) has suggested that a simple-effects analysis can be conducted on significant variables to examine the relationship more exactly. Disagreement on this issue exists among researchers and statisticians. Specifically, in this study, the disagreement would center on the appropriateness of an examination beyond the main effects because no significant interaction was found. However, in light of the disagreement, it seems appropriate to present the results of a simple-effects analysis and leave it to each reader to determine its value. Such results are presented here primarily because the analysis suggests an interesting trend.

A simple-effects analysis was conducted among the three ability groups on each grade level. The intent was to provide a more thorough examination of the relationship among the ability groups themselves.

The four simple-effects analyses indicated that the variance among the ability groups found in the main effects analysis was signficant only at the fourth grade level. On the sixth grade level, the difference approached significance. An *F* of 4.69 is significant at the .05 level. The obtained *F* on the sixth grade level was 2.90. The differences among good, average, and poor readers in the eighth and eleventh grades did not approach significance. The trend was for the values of *F* to continue to decrease as the grade level increased. Thus, some evidence was found to indicate that, while no overall difference in the effect on interest on reading comprehension existed across grade levels, the relationship between interest and reading comprehension among good, average, and poor readers may *tend* to dissipate as the level of academic maturity increases.

## Conclusions

On the basis of the analyses in the study, it was found that :

1. the effect of interest on reading comprehension differed significantly among good, average, and poor readers,
2. the reading comprehension of good readers was less affected by an interest factor than that of average readers,
3. the reading comprehension of average readers was less affected by an interest factor than that of poor readers,
4. the reading comprehension of good readers was less affected by an interest factor than that of poor readers,
5. the effect of interest on reading comprehension did not vary significantly across grades 4, 6, 8, and 11, and
6. there *may* be a tendency for the difference in the effect of

interest on reading comprehension among good, average, and poor readers to decrease as the grade level increases.

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# CHILDREN'S ABILITY TO SEGMENT SENTENCES INTO INDIVIDUAL WORDS

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The impetus for the present was a report of work done by Karpova (1955) testing for the presence of developmental levels in young children's ability to repeat and segment strings of isolated words and words in sentences. After ensuring that the children were able to identify the first, second, third, etc. pictures in a series, she asked each subject to repeat a string of two to four words and indicate which was the first, second, third and fourth word in the series. She gave children who succeeded at this task a series of sentences to repeat and segment, and found three levels of response to the sentence segmentation task. The youngest children (Level I) appeared to consider the sentence an indivisible whole and either indentified the whole sentence as the first word or expanded the sentence in their responses. A second group (Level II) reacted by dividing the sentence into subject and predicate or identifying only the nouns in the sentences as words. And a small percentage of children were able to identify the individual words within the sentence (Level III) with the exception of some function words.

Karpova (1956) concluded that the presence of these levels indicated a developing ability to separate the message of a sentence from its format and to think objectively about language. This ability to think and talk about language is referred to as metalinguistic competence. Separate from one's linguistic competence and one's linguistic performance, is the ability to discuss and analyze the language one uses and understands. Karpova's findings that children who could segment lists of words had varying degrees of difficulty performing this same task when the words were in the context of a sentence does seem to indicate that not all young children are able to separate the meaning of what they hear and repeat from its structure. The question the present study approached was whether there is a level of metalinguistic competence, as measured by a sentence segmentation task, necessary for children to be able to learn to read, and if performance on such a task might be predictive of differential success in beginning reading.

Although the existence of a relationship between sentence segmentation ability and reading and pre-reading behaviors has been examined in other studies (Hardy, Stennet & Smythe, 1973; Holden & MacGinite, 1969; and McNinch, 1971, 1973), the results are equivocal in terms of the nature and strength of such a relationship, and none of the previous studies looked at the development of this ability over time.

## Procedures

An aural word identification (AWI) test of 10 items was developed, ranging from three to eight words in each sentence and duplicating the structures used by Karpova. The levels she described were operationalized for each sentence, and subject's responses to each sentence were scored as representing one of those levels. Test-retest reliability was established at .98 (with standard deviations of 4.6 and 4.4 for the two testings) and inter-rater reliability of the scoring system was also determined to be .82.

The sample consisted of 45 kindergarten and 45 first grade children who were tested in September and again in December. The first testing session included a reading screening test (Durkin, 1966) to eliminate children who already could read, and the aural word identification task. The subjects were first asked to ennumerate a series of pictures, then a string of two to four isolated words. Subjects who had difficulty with either of these tasks were eliminated. The children were then told each sentence, asked to repeat it and to answer the questions, "What is the first word?", "What is the second word?", etc. The same task was re-administered in December and the first graders were given the Metropolitan Readiness Test in September and the Gates-MacGinitie Primary Reading Tests in December.

## Results

As the data indicates, the American children did not duplicate the same distribution identified by Karpova as the Russian children did across the levels of sentence segmentation ability. Far fewer Americans than Russians exhibited Level I performance, that is identified the entire sentence as the first word. In September there were some children performing at Level II, and the kindergarteners appeared more apt to divide the sentence into syntactic components (subject and predicate or just identifying the nouns) then the first graders. By December both age groups had improved their performance, and almost all the first graders evidenced some ability to segement sentences into the individual words. A chi square analysis was performed on the results of the American children, and was significant ($X^2 = 14.88$, $df = 3$, $p < .01$) but a partitioning to determine where the significant differences occurred was not attempted.

Although the Metropolitan Readiness Test was selected in part because, at a content analysis level, it does not appear to measure any ability which might be related to sentence segmentation ability and would therefore serve as a criterion for any predictive value the aural word identification test might have, the AWI test showed a higher correlation with the MRT ($r = .35$, $p = .02$) than with the scores on the vocabulary section of the Gates-MacGinitie ($r = .29$, $p = .04$). The coefficient of correlation between the MRT and the Gates was .55 ($p = .001$), and the addition of the September AWI scores into a regression equation predicting the December reading scores from the readiness scores did not significantly increase the accounted variance.

Although there were no predictive relationship between sentence segmentation ability and early reading performance, the existence of a possible concurrent relationship was also investigated. In September none of these children were able to read, and all could read a measurable amount by December. The subjects in December still demonstrated a limited range of performance on the sentence segmentation task. Were the better readers in September also better sentence segmenters? A $T$=test was performed on the reading scores comparing children above and below the mean on the December AWI test, and was statistically significant ($T = 2, 77$, $df = 35$, $p = .009$).

## Discussion

The results of the study indicate that American kindergarten and first grade children who can identify the individual words in a string of words are not all able to segment sentences into component words at the beginning of the school year. Although the kindergarteners showed some improvement over a three month period, it was not as dramatic as the increased performance of the first grade children who appear to have acquired an understanding of how to deal with words apart from their meanings as they are being introduced to reading. This may be indicative of a change in the nature of the language processing mechanisms children use, in that as they learn to read they begin to be able to focus on the structure of the sentence rather than process it in meaning units. Although the ability to do this seems to facilitate learning to read, in that the better segmenters were better readers in December, early segmentation ability does not appear to predict differential success in the early stages of learning to read.

Because of the mixed results of this and previous investigations of the relationship between segmentation ability and scores on reading and readiness measures, it may be that the ability to identify individual words in a sentence is a measure of a psycholinguistic cognitive trait which varies with individuals and which could be used to differentiate appropriate instruction for individuals and groups. It may be that children who have an early ability to abstract the concept of a word from its meaning would be more successful in a synthetic approach to beginning reading, while children who have more trouble developing this competence might have more success in an initial reading program based on sentence units and emphasizing meaning, such as a language experience approach. An aptitude-treatment-interaction approach to this question, matching high scores on an aural word identification task with one method and low scores with another could yield information which might directly influence success in the crucial stages of early reading achievement.

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# A COMPARATIVE ANALYSIS AMONG SOME VARIABLES AFFECTING FOURTH GRADE CHILDREN'S ABILITY TO READ TECHNICAL AND BASIC VOCABULARIES

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## ABSTRACT

The purpose of the study was to investigate possible relationships between a composite set of variables: father's occupational level, sex, reading achievement, intelligence, and basic vocabulary with the criterion, social studies vocabulary. The experiment was designed to determine differences in basic and technical vocabularies. It also attempted to ascertain if one fourth-grade sample actually knew the 34 social studies words isolated by previous research studies and labeled as essential to the mastery of social studies at the fourth-grade level.

Basic and technical (oral and written) vocabulary tests were developed by the investigator. These tests were administered to a fourth-grade sample. Reading achievement and intelligence scores were obtained using the California Reading Test, Form W, and the Lorge-Thorndike Intelligence Test, Form D. Father's occupational level was categorized by an accepted procedure using six levels ranging from unskilled to professional.

Collect data indicated that there was a significant relationship between the composite set of variables and the criterion, social studies vocabulary. Reading achievement was found to be the best single predictor of written social studies vocabulary. Father's occupational level and intelligence, when used in conjunction with reading achievement scores, added significantly to the level of prediction. No significant differences were recorded between the ability to read a basic or a technical vocabulary or to respond to a written or oral form of a technical vocabulary. The number of students who could read an arbitrarily selected 95% of the essential social studies words did not differ from that expected by chance.

# USE OF PREDICTION EQUATIONS AND COMPUTER SIMULATION FOR IDENTIFYING PREFERRED SENSORY MODALITY FOR TRAINING IN READING

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The purpose of the study was to construct a test battery which would identify the modality through which low achieving, inner-city elementary school children learn to read most efficiently. It is important to provide the right type of materials and the proper mode of instruction for each pupil in an economical and effective way. Current programs have placed emphasis on individualizing instruction for each child. Unfortunately, the preferred modality of a child has not always been included in diagnosing his individual needs.

Many attempts have been made in research to determine the best mode of presentation of reading instruction, for example, visual, auditory, kinesthetic, and multi-sensory, but these studies have often used tests of doubtful validity and have employed techniques which are impractical for classroom use.

One particularly innovative study dealt with identifying students' preferred modality by using computer simulations. Silberberg (1969) conducted a study which incorporated pretesting and posttesting, instruction, prediction equations, and computer simulation to predict how the students would have done in a mode of instruction other than the one to which they were randomly assigned. The present study is based upon the Silberberg model, which (with some modifications) has been selected for several reasons: (a) it is one which can be used in the school situation without making major changes in the curriculum (b) classroom teachers can conduct the instruction, (c) instructional materials utilized in the study are those which are already available in the school system, (d) statistical treatment, that is, step-wide regression analysis, will eliminate test instruments which do not contribute significantly to the prediction, and (e) the computer simulation process will render predicted scores for each child and each mode of instruction, even though it is not necessary for each child to receive instruction in each mode.

Silberberg concluded that as a result of his study a model was available which used simulation techniques in individualizing instruction. The technique seems to have much merit. However, many of the tests used were individual tests, some of which required a psychologist to administer, this would render the utilization of his model impossible for most public schools. The present study used the Silberberg model, in part, as the basic strategy but employed different tests which could be group administered by classroom teachers.

## Method and Materials

The subjects were 108 third-grade pupils selected from three inner-city schools in which there was a conventional basal reading program. The subjects were identified by their total reading score – vocabulary and comprehension – of the California Achievement Test. Those pupils who received grade level scores of 2.0 and below on the total reading component were included in the study. Of the inital group of 108 pupils, 99 who were available for final testing were used in the data analysis. Unlike the Silberberg study, which included only students of average intelligence or above, the pupils in the present investigation were slightly below-average in intelligence.

In each of three schools, three third-grade teachers were randomly assigned to mode of instruction. A comparison of selected teacher characteristics, such as age and years of teaching experience across the three modality groups, indicated the effectiveness of the random selection. In each school, there was one visual group, one auditory group, and one kinesthetic group.

After the subjects were identified, a battery of 10 psychological tests was administered in the fall. During the training period, 30 minutes per day for a period of 12 weeks was devoted to reading instruction in the three modality groups.

## Measuring Instruments for Prediction

Measuring instruments were selected for several reasons. The criteria for selection included: (a) that they may be group administered with the exception of the Wide-Range Achievement Test, which must be individually administered, (b) that they test in the areas which are considered pertinent to the types of instruction which the pupils would receive, (c) that they are tests which a classroom teacher can administer, (d) that they have acceptable reliability and validity, and (e) that many of these tests with some few exceptions were already available in the schools. The following tests were administered: the Bond-Balow, Hoyt Silent Reading Diagnostic Test, the Durrell-Sullivan Reading Capacity Primary Test, the Gates-MacGinitie Reading Tests, Primary B, the Goodenough-Harris Drawing Test, the Kinesthetic Test developed by the investigator, the Marianne Frostig Developmental Test of Visual Perception, selected Criterion-Referenced Tests from the Wisconsin Design for Reading Skill Development (word attack), the Slosson Drawing Coordination Test for Children and Adults, the Wepman Auditory Discrimination Test, and the Wide-Range Achievement Test (WRAT), Reading.

## Modes of Instruction

Instructional methods which can be said to be strictly visual, auditory, or kinesthetic cannot be found because there is always an element of auditory learning in the visual method, some visual learning in the auditory method, and some visual and auditory learning in the kinesthetic method. However, in the three modality groups, the major emphasis in the reading instruction was on learning words by the particular mode for that group, that is, visual clues for the visual group, sound clues for the auditory group, and kinesthetic clues for the kinesthetic group. For the purposes of this paper, the specific methods of instruction will not be described. However, it should be noted that the teachers were given specialized instruction and were observed throughout the experimental period to make sure that each teacher was restricting the teaching approach to the designated approach for that modality.

## Results and Analysis of Data

The purpose of the study was to determine if the Silberberg model for assigning students to mode of reading instruction would be applicable to inner-city subjects in grade three who were identified as poor readers. Several null hypotheses were formulated: (a) there will be no significant correlations between selected pretest variables and the three criterion variables; (b) there will be no significant multiple correlations between various combinations of pretests and the three criterion variables; (c) for each pupil there will be no significant difference between any of his three predicted criterion variable posttest scores for each modality group and his score on the same pretest; and (d) for each pupil, there will be no significant differences among his three simulated reading achievement scores obtained through the use of prediction equations.

The pupils were administered a battery of pretests, which were used as predictors of subsequent reading achievement. After the testing was completed, three modality groups in each school were formed by randomly assigning pupils to mode of instruction.

In order to determine if, prior to instruction, the three modality groups were equal with respect to the criterion variables, analysis of variance was employed on the three groups for pretest measures of each of the criterion variables. The *F* ratios for differences among each of the criterion variable tests, that is, the Gates-MacGinitie Vocabulary Test, Gates-MacGinitie Comprehension Test, and WRAT (word recognition), were not significant. Therefore, it can be assumed that the randomization procedure was effective with respect to the criterion variable measures.

An analysis of mean gains for each of the three modality groups on each of the three criterion variables before and after 12 weeks of instruction indicates highly significant gains in vocabulary, comprehension, and word recognition for each group.

**Table 1**

**Prediction Equations for Gates-MacGinitie Vocabulary Test for Each Modality Training Method**

| Method | Prediction Equations | | Correlation Coefficient |
|---|---|---|---|
| Visual | + 0.071 | WRAT, pre | 0.740 |
| | − 6.842 | Constant | |
| Auditory | + 0.085 | Goodenough | 0.813 |
| | + 0.823 | WRAT, pre | |
| | −20.152 | Constant | |
| Kinesthetic | + 0.342 | Vowel and Con. Sounds | 0.615 |
| | + 0.254 | | |
| | + 4.991 | | |

To test null hypothesis 1, correlations were computed between each of the 25 tests and each of the three criterion variables. Sixteen out of the 25 pretest variables were significantly correlated with the Gates-MacGinitie Vocabulary posttest, 15 were significantly correlated with the Gates-MacGinitie Comprehension posttest, and 13 were significantly correlated with the WRAT posttest. On the basis of the results of these correlations, null hypothesis 1 was not accepted.

In testing null hypothesis 2, multiple correlation coefficients were derived from a step-wise regression analysis for each criterion variable. The multiple correlations in this analysis were based upon relationships between certain of the pretests which were most predictive of the three criterion variables. As indicated in Tables 1, 2, and 3, the multiple correlations between selected pretest variables and the criterion variables were both high and significant. Therefore, null hypothesis 2 was not accepted.

**Table 2**

**Prediction Equations for Gates–MacGinitie Comprehension Test for Each Modality Training Method**

| Method | Prediction Equations | Correlation Coefficient |
|---|---|---|
| Visual | − 0.2851 x Chronological age | 0.8814 |
| | − 0.5360 x Syllabication | |
| | + 0.5533 x Ending sounds | |
| | + 0.2374 x Word meaning | |
| | + 0.4032 x WRAT, pre | |
| | + 20.6179 x Constant | |
| Auditory | + 0.2779 x CA | 0.86 |
| | − 0.3409 x Syllabication | |
| | + 0.2076 x Word meaning | |
| | + 0.8212 x Kinesthetic | |
| | + 0.9757 x WRAT, pre | |
| | − 52.6905 x Constant | |
| Kinesthetic | + 0.3661 x WRAT, pre | 0.67 |
| | + 2.0699 x Constant | |

## Table 3

## Prediction Equation for WRAT for Each Modality Training Method

| Method | Prediction Equations | Correlation Coefficient |
|---|---|---|
| Visual | + 0.2576 x Slosson | 0.96 |
| | + 0.9719 x WRAT, pre | |
| | + 0.4237 x Words & phrases | |
| | – 0.0460 x Goodenough | |
| | – 1.8256 x Frostig, V | |
| | – 1.2156 x Constant | |
| Auditory | – 0.3370 x Frostig, III | 0.95 |
| | – 0.3264 x Vocab., pre | |
| | + 0.3423 x Compre., pre | |
| | + 0.2187 x Rhyming ele. | |
| | + 1.2676 x WRAT, pre | |
| | – 4.2244 x Constant | |
| Kinesthetic | + 0.0791 x Goodenough | 0.95 |
| | + 0.9886 x WRAT, pre | |
| | + 0.2350 x Rhyming ele. | |
| | – 5.5187 x Constant | |

Prediction equations were formulated as a result of step-wise regression analysis. These equations were composed of the pretest variables which emerged from the regression analysis as contributing significantly to the prediction of the criterion variable. Table 1 presents these equations and the multiple correlations for each training group on the Gates-MacGinitie Vocabulary Test.

In the prediction, a pupil's pretest scores for the particular variables in the equation were multiplied by each weighted figure given for the variable. The computations were then added, and the constant was added to or subtracted from the result. The result was then converted to a grade equivalent for the particular criterion variable for which the prediction was estimated. The result was the score the pupil was predicted to make if he were given instruction in the method for which the calculation was made. To illustrate the technique for using the prediction equations, the following example is given.

Simulating pupil number 44, who was assigned to the kinesthetic method, his predicted response to the auditory method for vocabulary would be estimated by multiplying his scores for the Goodenough-Harris Drawing Test and the WRAT pre-test by the weights in the equation and subtracting the constant, as follows:

$$\begin{array}{lrrll} \text{Gates Vocabulary} = & +0.084 \times 76 & = & +6.443 & \text{Goodenough} \\ & +0.823 \times 34 & = & +27.990 & \text{WRAT, pre} \\ & & & -20.151 & \\ \hline & & & 14.281 & = 14.2\text{[illegible]} \end{array}$$

The sum obtained from the calculation would then be converted into a grade equivalent. The grade equivalent for a raw score of 14 is 1.4. Thus, pupil number 44 would be predicted to make a score of 1.4 if he had been assigned to the auditory method instead of the kinesthetic. Table 2 presents the prediction equations using comprehension as a criterion variable.

Table 3 presents the prediction equation for each modality group, using word recognition as the criterion variable.

The high multiple correlations in Tables 1, 2, and 3 made it possible to construct useful prediction equations.

To test hypothesis 3, the students' three simulated scores were analyzed to see if any of their three simulated final scores were significantly higher than their pretest scores. To be significantly higher, the simulated score had to be at least 1.96 $\sigma$ higher than the pretest score. The criterion had to be met before pupils' scores would be considered as being significantly higher or lower than one or two of their other scores. The results indicated that the number of students with simulated scores which were significantly higher than their pretest scores ranged from 41 to 93 across all three simulated modality groups for each of the three criterion variables. On the basis of these findings, null hypothesis 3 was not accepted.

Null hypothesis 4 was tested by utilizing the prediction equations derived from the scores of students in each modality group and applying each student's pretest scores to the equations, the computer simulation providing simulated scores for each student for each criterion for the three methods of instruction. Since the confidence interval is critical in assessing inner-group differences in a prediction problem, confidence intervals were estimated on each side of the predicted score in every case. In the Silberberg study, it was stated that a ± .5 standard deviation was used as the confidence interval around each predicted score. (It is not clear to the authors what kind of "standard deviation" was used by Silberberg.) In this study a higher level of significance ± 1.96 "standard error of the estimate" on either side of the predicted score was established. Thus, decisions could be made as to whether one of the student's scores was significantly higher than the others. In other words, if the lowest limit of the confidence interval of one simulated score were higher than the highest limit of another simulated score, the highest simulated score could be said to be signficantly higher than the other simulated score. Unfortuantely, no significant differences were found using this conventional regirous confidence interval. Consequently, the decision was made to compute confidence intervals on the basis of ± .5 standard errors of the estimate.

Although the limitations of using a low level of significance were apparent, the decision nevertheless was made, to run the simulations using a criterion which is (presumably) similar to Silberberg's study. Using this confidence interval, many significant differences among simulated scores were found.

In analyzing the computer simulation results, it was found that 41 students had one simulated score which was significantly higher than their other two simulated scores for the WRAT criterion variable, 14 students had one simulated score significantly higher than their other two simulated scores for the comprehension variable, and only two students had one simulated score significantly higher than their other two simulated scores for the vocabulary variable. However, in the analysis, it was also found that all three predicted scores for some students for a particular criterion variable overlapped. In some cases the lower limit was higher than the upper limit of one score but not of the third score. Also, in some cases one simulated score was significantly higher than the other two scores but was not significantly higher than the actual pretest score. Thus, decisions had to be made as to whether a pupil had a "best" or "better" method, or whether all three of the methods were equally efficient for that pupil.

Therefore, several categories were established in which the pupils' predicted scores fell.

*All three methods equally efficient.* All three of the predicted scores of each modality were significantly higher than the pretest score and all confidence intervals overlapped.

*One "best" method.* The predicted score for each modality was significantly higher than the pretest and one score was significantly higher than the other two scores.

*Two "best" methods.* Two predicted scores for two modalities were significantly higher than the pretest, their confidence intervals overlapped, and both were significantly higher than the third score.

*One "better" method.* Only one predicted score for a modality was significantly higher than the pretest, but the confidence intervals overlapped the other two predicted scores which were not significantly higher than the pretest.

*Two "better" methods.* Two predicted scores were significantly higher than the pretest, the confidence intervals of both overlapping with each other, and with a score not significantly higher than the pretest score.

*Zero "best" or "better" methods.* No scores were significantly higher than the pretest score even though there may or may not have been overlapping confidence intervals.

**Table 4**

**Simulated Allocation of Subjects to Mode of Instruction by Prediction Equations**

| Categories | Vocabulary (N = 99) | Comprehension (N = 99) | WRAT (N = 99) |
|---|---|---|---|
| Zero "best" or "better" method | 42 | 36 | 2 |
| One "best" method | 2 | 14 | 41 |
| Two "best" methods | 1 | 11 | 23 |
| One "better" method | 10 | 9 | 4 |
| Two "better" methods | 13 | 16 | 9 |
| All three equally efficient | 31 | 13 | 20 |

Table 4 depicts the results of the analysis of the scores using the ± .5 standard error of the estimate for confidence intervals.

The allocations which were made based upon analysis of the computer simulations, revealed that word recognition (WRAT) had many more pupils allocated in the category of "best" or "better" methods than both the vocabulary or comprehension criterion variables. The implications of the findings might be that for these particular types of pupils, word recognition is perhaps the primary factor in the reading process, and lack of the ability to recognize words would naturally hinder the pupil in vocabulary and comprehension ability.

Those pupils who were placed in a method which was not their "best" or "better" method were considered "wrongly" placed. An analysis of the simulated scores was made to determine the number of "wrongly" placed pupils. It was found that 46 out of 99 pupils were "wrongly" placed when word recognition was used as a criterion variable, 14 out of 99 pupils were "wrongly" placed when vocabulary was used as a criterion variable, and 32 out of 99 pupils were "wrongly" placed when comprehension was used as a criterion variable. Had these "wrongly" placed pupils been assigned to the modality group which was predictably their "best" or "better," modality, approximately 1/2 would have achieved an average of four months higher in word recognition, 1/3 of the pupils would have achieved an average of two months higher in comprehension, and 14% would have achieved an average of two months higher in vocabulary. The number of "wrongly placed pupils for each modality training group was 36, for the visual and auditory training groups, respectively, and 21 for the kinesthetic training group. Thus, it was concluded that training emphasis upon a particular sensory modality was of importance for only a minority of these pupils.

Even though the purpose of the study was to make decisions concerning which mode of instruction was best for each individual pupil, a further group analysis was made of the data using the predicted values. This analysis was for the purpose of comparing the difference between a group mean of actual posttest scores of the pupils in the modality group to which they were assigned and the mean of a hypothetical group composed of the pupils assigned to the group in which their highest predicted score fell. Highly significant mean differences were found. In other words, there would have been a significant difference had pupils been placed in the modality group in which they had their highest predicted scores, regardless of whether these scores were significantly higher than any other of their predicted posttest scores or not. This conclusion holds true for each of the three criterion variables.

## Summary and Conclusion

In conclusion, results of both the Silberberg and the present study hold promise for the computer simulation technique in the selection of pupils for modality training in reading. However, further study of an experimental nature is needed to strengthen any conclusions drawn from both investigations. It is recommended that other studies be conducted in which the effects of generalizing the prediction equations from one school year sample to another school year sample in the same school district be made. This could be done by administering the tests suitable for prediction equations based upon the previous year's test results, applying the pupils' scores to the equations, assigning each pupil to the mode of instruction in which he had the highest predicted score, and giving instruction in that particular mode. A decision concerning the value of excluding from consideration those pupils whose simulated scores are not significantly higher than their pretest scores must await further research.

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# EXPERIMENTS IN PHONEME SHIFTING PERCEPTIONS IN PRE-LITERATE AND LITERATE SAMPLES

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In the present search for factors or combinations of factors that are related to initial reading success or failure, Savin (1972) and Gleitman and Rozin (1973) have offered some interesting observations in the area of pupils' aural control of sounds within words or syllables. Savin (1972) postulates that primary children who cannot analyze syllables into constituent phonemes or manipulate these phonemes within syllables (Pig Latin) are prone to evidence failure in reading acquisition or in learning to read even the simplest prose. Phonemic segmentation is a psychoacoustic skill not mastered by all children prior to the onset of instruction; however, the potential for mastery is evident in some very young children. Savin uses this observation to make a case for syllabic reading instruction, but Kavanaugh and Mattingly (1972) point out that Savin could cite no data directly linking phonemic segmentation to initial reading success or failure, leaving his case for modified instruction based on postulated theoretical assumptions.

Gleitman and Rozin (1973), while also trying to develop their case for syllabic instruction in early reading programs, postulate an interesting theoretical conclusion involving children's manipulations of language: " . . . the child has difficulty in segmenting the sound-stream into phonemic chunks and therefore cannot map the discrete alphabetic units onto equivalently discrete speech units" (p. 479). Apparently, the authors feel that children contact instructional programs asking for equivalent phoneme-grapheme decisions before they are able to adequately segment or transpose sounds within words or syllables. Little direct evidence is given though, to support the development of phoneme segmentation in young children.

Using an experiment in blending, Allen, Rozin, and Gleitman (1972) investigated differences in children's abilities to phonemically or syllabically integrate sounds into words. The authors concluded that the kindergarten children were more responsive to syllable blending than to phoneme blending. In an analytic experiment Liberman, Shankweiker, Carter, and Fischer (1972) concluded that pupils' awareness of linguistic or language structures at the phoneme level was difficult to attain.

Phonemic segmentation (the ability to analyze words into discrete sound units and rearrange them into different words) may be a psycholinguistic or psychoacoustic factor involved in reading acquisition under certain learning conditions; however, there are no direct data currently available that investigate this narrow aural perceptual skill in prereading or beginning reading samples. For the purposes of this investigation the following questions are posited for study: (a) Is phonemic shifting associated with traditional readiness estimates in a prereading sample? and (b) Is phonemic shifting associated with success in initial reading acquisition?

## Procedures

### Sample

To investigate the association of phoneme shifting in prereading and beginning reading samples, two grade level samples, beginning first grade and beginning second grade, were utilized. Descriptive data were obtained on the samples in September 1974 using the Metropolitan Reading Readiness Test, Form A, or the Metropolitan Reading Test, Primary I, for first (N = 104) and second ( N = 96) grades, respectively. Percentile scores were computed for total scores and testing groups were randomly selected: Group 1 (N = 15), scoring above the 60th percentile on the readiness test; Group 2 (N = 15), scoring below the 40th percentile; Group 3 (N = 15), scoring above the 60th percentile; and Group 4 (N = 13), scoring below the 40th percentile. Prereading investigations used groups 1 and 2, and beginning reading acquisition samples used groups 3 and 4. Descriptively, the grade level samples recorded percentile profiles closely approximating the national norm.

### Instrument

To evaluate the subjects' ability in psychoacoustic phonemic shifting, a phoneme shifting test (PST) was constructed by the author. Thirteen words were chosen by the author for their complete phonemic reversal properties (Pam/map; god/dog, etc.) to make the three practice and ten stimuli items. Subjects were presented a 4" X 6" card containing four pictures. The pattern word was pronounced as a whole, then twice in its constituent parts (p-a-m, etc.). Each of the three remaining word-pictures was named and the pupil was asked to identify which of the three words had the same three sounds as the pattern word-picture but in a different order. Pictures of the words were used so as to reduce the burden of auditory memory. The simple pen and ink drawings did not appear to distract the subjects. On the instrument the shifting of only the first and last phonemed was evaluated, since the medial vowel remained constant in each word. In some instances there were a slight distortions of the medial sound; however, it usually remained an allaphone of the original phoneme. Reliability for the phonemic reversal test has not been established. Face validity appears to exist.

### Method

Subjects were divided into good and poor groups based upon the standardized instrument and were then tested individually in the mornings on the PST. Individual testing was done by two reading faculty members and two graduate students; all the testing was done in the elementary school. Testers were trained on the administration of the PST by the author. Training sessions continued until each tester could successfully product the segmented phonemes of the thirteen stimuli words with consistency and conformity. Sound production across examiners was apparently similar and consistent. Although testing was done at desk stations set up in the halls of the school; it is felt that conditions were adequate because disturbances and distractions were at a minimum. Standardized testing for establishment of groups was completed by the same testing personnel using intact classrooms and following the procedures in the test manuals.

## RESULTS

The first investigation attempted to determine the differences existing in phonemic shifting ability between a group of pupils labeled as adequate in readiness and a group labeled as inadequate in readiness. Analysis of variance techniques were applied to the mean raw scores on the PST. The analysis indicated a non significant *F*-ratio ($F = .15$; d.f 1, 28; $p > .05$) was recorded on group comparisions. There were no significant differences between the two groups in the quality of their phonemic shifting responses. Phonemic shifting does not appear to be a skill that can separate high readiness children from low readiness children.

The phonemic shifting responses of children successfully acquiring reading responses as measured by a standardized reading instrument (good reading second graders) were compared to those of children who were not successfully acquiring reading responses (poor reading second graders). Using the scores obtained on the PST, the computed F. ($F = 3.29$; d.f.;, 28, $p > .05$) on the good/poor comparison was not significant. Apparently, phoneme segmentation and shifting abilities as measured by the PST do not differentiate between good and poor beginning readers. Perhaps phonemic shifting is not a skill required or associated with the initial acquisition of reading responses as measured by a standardized achievement battery.

### TABLE 1

**Computed t-ratios between group $\overline{X}$ scores on PST and chance probability (3.33)**

| Group | N | $\overline{X}$ | s | t | p |
|---|---|---|---|---|---|
| High Readiness | 14 | 3.66 | 1.74 | .76 | NS |
| Low Readiness | 15 | 3.87 | 1.67 | 1.33 | NS |
| High Reading | 15 | 6.50 | 2.58 | 4.80 | .05 |
| Low Reading | 13 | 4.92 | 2.00 | 2.95 | .05 |

Phonemic shifting has been postulated as a skill that may be mastered in a development sequence. To explore this developmental task aspect of the skill as measured by the PST, *t* tests were computed between the group means and chance probability of selection. Chance selection on the 10 item three choice test would be 3.33. Table 1 gives the *t*-ratios for the four groups. Each of the first year test groups (high and low readiness) recorded non-significant *t*-values indicating that perhaps phonemic shifting is a skill that is not mastered by the approximate age of six or at least by entrance to first grade.

Two significant *t*-ratios ($p < .05$) between chance probability and group means on PST were recorded for the two second year groups (high reading and low reading). Apparently, beginning second grade pupils respond to the PST in an organized and functioning manner; however, as shown earlier in the analysis of variance, there were no significant differences between the groups. Phonemic shifting is a skill that may be developed by entrance to second grade regardless of the reading status of the pupils. Left unanswered by the analysis, however, is the question of whether the skill development is due to developmental linguistic-psychoacoustic maturation or to some intervening instructional sequence.

## Discussion

Savin (1972) postulated that a distinguishing difference between children acquiring reading responses and children not acquiring reading responses was a marked disparity in phoneme segmentation abilities. He further elaborated and conjectured that phoneme shifting (Pig Latin), the conscious manipulation or replacement of phonemes within syllables, was even more of an indicator of possible reading acquisition success. However, the data from the present study do not appear to verify these assumptions. Phoneme segmentation and shifting as measured on the experimental instrument did not discriminate between good and poor first-grade readiness groups or good and poor beginning second-grade readers. The mean responses of the two groups at each level were highly similar to parallel means scores. In each group there appeared to be pupils who could do the task and those who could not manipulate the sounds successfully. There appears to be a little association between shifting and either readiness for reading or initial reading. Success in reading (at least at beginning second-grade level) can progress without developed abilities in phoneme shifting when the pupils are instructed under a basal type reading instruction.

Allen, Rozin, and Gleitman's (1972) data on phoneme awareness were indirectly verified by the results of the study. Prereaders and beginning readers do have difficulty in perceiving phonemes on the PST. In Allen et al. (1972), prereaders tended to blend syllables more adroitly than phonemes to produce aural words. In the present study phonemes were not manipulated at all by pre readers, a circumstance similar to the Allen et al. data. Unique phonemes appear to be difficult if not impossible for prereaders to segment or blend. Prereaders have not developed the psycho acoustic skills necessary for successful completion of this auditory perceptual task. Therefore, there does appear to be support for their conclusion that "awareness of linguistic structure at the phoneme level might be difficult to attain." (p. 463)

The developmental nature of phoneme segmentation is discussed and posited by Savin (1972). The results from this study do seem to support his developmental hypothesis. Beginning first-grade pupils, regardless of readiness classification, were not able to handle the task; their mean scores on the PST did not differ from chance expectations. The beinning second graders' scores did differ from chance—they were able to handle the phonemic segmentation and shifting task. Between the onset of school and the beginning of second grade something (process or instruction) intervenes and causes or hastens development in psychoacoustic skills.

Phonemic shifting, then, does appear to exist as a psychoacoustic skill that can be measured and does seem to occur in a developmental manner. Instruction in reading can progress successfully without this skill, and perhaps development of phonemic shifting skill is a product of first-year instruction.

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# A COMPARISON OF PHONEME SHIFTING RESPONSES BETWEEN A SAMPLE OF NONREADING ADULTS AND GROUPS OF ELEMENTARY PUPILS

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## ABSTRACT

This study attempted to compare the phoneme shifting ability of non reading adults, remedial elementary students, and good reading elementary students as determined by standardized and informal reading tests. The Phoneme Shifting Test was used to evaluate the phoneme shifting skill. The shifting of the first and the last letters of the words was evaluated. Individual testing was done during October 1974. To test the hypothesis of significant differences, a one-way analysis of variance was computed on the number of correct responses. Phoneme shifting skills were found to be a variable that can apparently discriminate among reading groups. Results indicated that there was a difference between the good and the remedial groups and the adult group and the good group in the way they responded to the phoneme shifting measure. The remedial group and the non reading adult group did not seem to differ in the way they responded. The discrepancy between the good readers' responses and those of the illiterate adults provide's some evidence that the adult's may not profit from a traditional developmental program.

# A COMPARATIVE ANALYSIS OF READING COMPREHENSION IN FOUR CONTENT AREAS

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Research investigating the relationship between genral and specific tests of reading at the secondary level (Swenson, 1942; Shores, 1938; Shores, 1943; Artley, 1944; Sochor, 1948; Maney, 1958) has been inconclusive. However, those who have utilized general reading tests (Davis Reading Test, Gates-MacGinitie Reading Test, Sequential Test of Educational Progress) have used the results to predict specific reading performance in secondary level, content area classrooms. The purposes of this study were (1) to investigate the relationship between the Sequential Test of Educational Progress and four content area reading tests (math, social studies, English, science) and (2) to ascertain whether performance on one content area test is more predictive of reading achievement than performance on the others.

## Review of the Literature

A search of the literature revealed a dearth of research on the relationship between reading ability as predicted by a general test-of reading ability (Davis Reading Test, Gates-MacGinitie Reading Test, Nelson-Denny Reading Test) and tests developed to assses various reading skills necessary to comprehend reading material in the content areas (Interpretation of Literature Test, Algebra; Cooperative Mathematics Test; General Science Every Pupil Test). With the exception of one study, no research has examined the relationship between these measures of reading performance in the last 17 years.

Shores (1938), Bond (1940), Covell (1955), and Connor (1971) compared the relationship between various reading skills as identified by content area reading tests and reading skills as measured by a general reading test to ascertain which instrument was a more accurate predictor of reading performance in content area classrooms at the secondary level. Their results, when analyzed, seemed consistent: the scores obtained on the content reading tests had a higher degree of correlation with reading performance than did the general measures of reading ability.

The research conducted by Artley (1942, 1944) indicated that the relationship between reading performance on general and specific reading tests correlated more significantly with reading performance in the content area than did the previous studies. However, his conclusions were much the same.

Shores (1938) investigated the relationship between the specific reading and study skills necessary to the comprehension of scientific and historical materials. Shores concluded that the ability to comprehend the reading materials of science or history is predicated upon specific reading abilities that may not be necessary for the comprehension of materials written for other content areas. Sochor (1948) examined the relationship between general reading ability and the specific reading abilities necessary to comprehend social studies materials. Her research lends support to the need for content area reading tests and the inclusion of content area teachers in their construction.

The implication drawn from these studies is important, because it suggests that content reading tests are more accurate than standardized reading tests in predicting reading performance in a specific content area. This implies that content teachers might be better served by content reading tests than by standardized reading tests, since general reading tests appear to be less accurate. This assumption seems to conflict with the theories espoused in many of the professional materials presently on the market, that is, that broad based diagnosis, the inclusion of as many variables as possible in assessing reading performance, will produce a more accurate prognosis than-one measure of reading performance.

A major weakness of all these studies is that generally they were limited to the areas of English and social studies. Except for the work Maney (1958) and Swenson (1942), very little was done in the area of science. No research has been done in mathematics. An additional weakness is that they failed to analyze the relationship between various subtest components of the content reading test and general reading performance as measured by achievement on a standardized reading test. The present study attempts to rectify these shortcomings by investigating not only the relationship between the content area reading subtests and general reading performance but also the relationship between each of the subdivision groupings within each subtest and reading performance as measured by a standardized reading test.

## Method

One of the basic criticisms of standardized reading tests utilized at the secondary level is that the content upon which reading skill assessment is predicated does not accurately reflect the reading skills secondary content teachers require in order for a student to successfully function in their particular classroom. As has been often suggested, more accurate results are obtained when the instrument assessing reading performance duplicates as closely as possible the activities the classroom teacher requires. Reading comprehension, then, becomes defined according to how it is operationalized in the classroom.

In order to construct a content areas reading test that was representative of reading skills content teachers felt were important requisites for successful reading performance in their particular content area, representatives from math, English, history, and science were selected to determine the content make-up of each subtest. A comprehensive checklist of reading skills was developed. Each teacher indicated which reading skills he or she felt were essential. Once the priority skills were identified materials and test questions were written by the representatives from each content area. The content area subtests were then combined into one 135–item test (math, 38 items; science, 34 items; English, 23 items; and history, 40 items.)

Reliability of the test was established by utilizing the General Item Analysis Program. It provides the researcher with a Hoyt internal consistency reliability coefficient. The Hoyt reliability coefficient for this instrument was .95. In order to determine content validity, an evaluation of how well the test questions reflected the requisite skills required to function in each of the content areas had to be made. Content validity was established on the logical procedure utilized in constructing the test.

### Subjects

The sample consisted of 663 students, the entire eight-grade population of three middle schools in a midwestern city of approximately 180,000 people. The three schools were chosen because they represented the entire socioeconomic status range of the city.

Each student participating in the study took the Sequential Test of

Educational Progress (STEP) Series 2, Form B before taking the content area comprehension test.

### Design

Multiple regression procedures were used to develop a model which predicted STEP achievement on the basis of nine independent variables. The independent variables were seventeen subdivision groupings of the four subtests–math, science, English, and history (Figure 1). The STEP was the dependent variable.

**FIGURE 1**

**Dependent Variables**

| | |
|---|---|
| Math | Concepts (2)* |
| | Tables, Graphs & Charts (3) |
| | Symbols (4) |
| | Total Composite Score (5) |
| Science | Tables, Graphs & Charts (6) |
| | Symbol (7) |
| | Total Composite Score (8) |
| | Critical Reading (12) |
| | Details (13) |
| English | Literal (9) |
| | Critical (10) |
| | Total Composite Score (11) |
| History | Critical (14) |
| | Tables, Graphs & Charts (15) |
| | Total Composite Scores (16) |
| | Study Skills (17) |
| | Concepts (18) |

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*The numbers in parentheses are the variables identified in Table 2

The seventeen content variables were measured by 135 locally constructed items grouped into four subtests. The specific variable indicators were selected on the basis of both logic and a psychometric criterion. This was accomplished by treating content meaningful item groupings within each of the four subtests and then analyzing their reliabilities. When the multiple regression procedures were performed, stepwise procedures involving various combinations of the dependent variable under several sequence were utilized. The aim was to identify those content variables most predictive of STEP assessment. The reliabilities of the nine subdivision grouping measures were determined by Hoyt's procedure.

As the multiple regression coefficients reveal, the Sequential Test of Educational Progress (STEP) is highly correlated with the history (.712) and the English (.734) subtests and moderately correlated with the math, (.619) and science, (.635) subtests. These results seem to indicate that there is a moderate to high degree of correlation between the STEP and the four content area subtests. The moderate correlation between the science and math subtests can-be partially explained by a cursory examination of the reading selection used in the STEP. Most of the reading selections contain material similar in content to the material one might expect an English or history teacher to utilize his or her classroom. Therefore, as onemight expect, a variation between subtest scores does exist. However, this might also suggest that the STEP might be less accurate in predicting reading performance in science and math than in either English or history. These results are not consistent with the findings of Artley (1944) and Sochor (1958), who contended that there was a high degree of correlation between specific reading skills and general reading skills.

The argument that there is a high degree of correlation between reading skills and specific reading skills is not supported when the subdivision groupings are analyzed. It was possible to ascertain the extent to which the seventeen independent variables are correlated with one another by examining the results. While four of the skills, English details (.686), English critical reading (.678), history critical reading (.653), and history concepts (.719) were highly correlated with performance on the STEP, the same skills, when functioning as part of the science subtest (critical reading, .486, and details, .429), had a low degree of correlation with the STEP. Further analysis of the results indicated that while history concepts were highly correlated with the STEP, math concepts were not. These findings seem to indicate that general and specific reading skills are not as highly correlated as early research to suggested, that is, science critical reading should have a significant degree of correlation with English or history critical reading, but it was not supported by the study.

It would appear that the broad general assumption that there is a high degree of relationship between general and specific reading tests at the secondary level was not substantiated by this study. What appeared to be revealed was that the English and history subtests were highly correlated with the STEP while the math and science subtests were not. Secondly, when related skills across content areas – critical reading, conceptual understanding, and literal recall – were compared, low correlation coefficients were revealed suggesting that the STEP was not as predictive of reading performance as was earlier thought.

## Implications

The implications of these results are significant for secondary content teachers. First, they suggest that if reading performance, as it relates to a specific subject matter, is important, general reading tests may not provide the information teachers desire. If content teachers are concerned with how students function within the content of their content area, content reading tests that reflect those priorities should be developed.

Second, the assumption that the results obtained on one test, for example, critical reading in history compared to critical reading in math, were generalizable to other content areas is not substantiated by this study. Therefore, secondary teachers should be more concerned with how students function given materials designed for use in their classroom than with how they function given general reading materials. Teachers can best accomplish this by constructing their own classroom assessment instruments.

These results also have important curricular implications for developmental reading at the secondary level. Generally, reading skills have been taught as part of special developmental reading classes. The general approach in these courses has been to teach the skills without regard to direct transfer to all content area classrooms. Developmental reading teachers have been forced to assume the role of content teachers in order to teach specific readings skills. Many times this results in teaching critical reading as it is defined in all content areas. As this study seems to indicated, this may not be the most efficacious means for teaching specific content reading skills.

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# THE EVALUATION OF COMPREHENSION WHEN ENGLISH IS A SECOND LANGUAGE BY USE OF THE CLOZE PROCEDURE

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## ABSTRACT

The purpose of the study was to evaluate the effectiveness of the cloze procedure when measuring the comprehension of students who use English as their second language. Four cloze tests were constructed from equivalent reading materials. Deletion criteria included "any word" (every fifth), structural, and lexical words. An aural "any word" cloze was also used. Rank ordered cloze test scores were compared with an English comprehension test. The subjects were 29 male Allied Air Force officers from 13 countries. Results from rank order correlations and analysis of variance indicated that the cloze test scores were significantly related to scores on other English comprehension tests; that structural cloze test scores were significantly higher (.05 level of confidence) than "any word" deletion cloze test scores; that lexical deletion cloze test scores were significantly lower than the structural deletion scores at the .01 level of confidence; and that 15 American officers who served as a comparison group achieved results that parallel the Allied officers on the cloze tests, but at a higher level of proficiency. The cloze procedure was able to effectively measure the comprehension of students who used English as their second language. The cloze procedure appears to evaluate English second language subjects in a manner similar to American subjects, but native English speaking subjects score consistently higher on cloze tests than English second language subjects.

# NOTE ON NORMS FOR THE CARVER–DARBY CHUNKED READING TEST

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The Carver-Darby Chunked Reading Test (CDCRT) was designed to measure the information storage of mature language users during reading. It was also designed with an edumetric approach which focuses upon progressive within-individual gains as contrasted with the traditional psychometric approach which focuses upon stable between-individual differences (Carver, 1972). While the CDCRT was primarily designed from the edumetric viewpoint, a person utilizing it may wish both to know about the performance of the group as a whole and to be able to interpret this information in a meaningful manner. A lack of information concerning the normative sample makes it difficult to make a knowledgeable interpretation of individual or group performance. Inconsistencies between the normative data (Carver & Darby, 1972, p.5) and any other data are difficult to analyze due to this lack of information.

Carver and Darby do state that "subsequent data collection may indicate that this sample may be grossly unrepresentative of college students. However, for the 60% value to be grossly unrepresentative it would need to change by at least 20 percentile points in order to begin to seriously affect interpretations of test scores" (p. 26). Unfortunately, this seemed to be the case.

The author's initial impetus for collecting data on the CDCRT was the evaluation of a reading improvement program. Data were gathered specifically for the purpose of comparison with the normative figures when it became evident that the observed frequencies differed substantially from the norms. Data samples were taken from a small, liberal arts, state university (approximately 3000 students), a technical institute, and a community college to provide normative data for a large and diverse group of users and possible users of the CDCRT.

As shown in table 1, this author's percentages differ from those given in the manual for all the populations sampled. Chi-square analyses indicated significant differences for all samples when compared with the CDCRT norms:
$X^2$ small liberal arts, state university (c) = 296.40, $p < .001$;
$X^2$ technical institute (5) = 470. 16, $p < .001$; $X^2$ community college (5) = 5.63.8, $p < .001$.

## Table 1

Normative Data on the CDCRT From Three Different Post-Secondary Institutions

Compared With the CDCRT Manual Norms.

| Type of Reader | | CDCRT Manual | Small, Liberal Arts State University | | Technical Institute | | Community College | |
|---|---|---|---|---|---|---|---|---|
| | | % | N | % | N | % | N | % |
| I. | Efficient, Accurate, Rapid | 60 | 247 | 40 | 20 | 13 | 2 | 2 |
| II. | Efficient, Accurate, Slow | 20 | 109 | 18 | 18 | 12 | 9 | 9 |
| III. | Efficient, Inaccurate, Rapid | 3 | 43 | 7 | 7 | 4 | 3 | 3 |
| IV. | Inefficient, Accurate, Slow | 7 | 51 | 8 | 21 | 13 | 6 | 6 |
| V. | Inefficient, Inaccurate, Rapid | 3 | 33 | 5 | 16 | 10 | 29 | 29 |
| VI. | Inefficient, Inaccurate, Slow | 7 | 138 | 22 | 75 | 48 | 51 | 51 |
| | Total | | 621 | | 157 | | 100 | |

The results indicate that the normative sample was somewhat unrepresentative of college students and definitely did not provide useful norms for other populations where the CDCRT might be utilized. It is hoped that the data provided will give those using the CDCRT: (a) more accurate indication or relative status in relation to a group of college students (b) and initial norms useful in the technical institute and community college settings.

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# A SEMANTIC ANALYSIS OF READING COMPREHENSION TESTS

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Standardized reading comprehension tests have been viewed and analyzed in a variety of theories and techniques. A view which may be called semi-behavioral is that these standardized tests, which are used to make decisions and judgment about the comprehension ability of reader, also possess the qualities or traits of the process labeled *comprehension*.

Analyses of reading comprehension tests in the search for components of comprehension seem to have taken two major paths, (a) factor analysis and (b) grammatical or parts of speech analysis. A third path, that of semantic analysis via linguistics, has been somewhat by-passed, usually under the guise of being too subjective.

Many researchers (Feder, 1938; Gans, 1940; Davis, 1941, 1944, 1945, and 1968; Hunt, 1952, 1957; Holmes, 1954) have pursued factor analytic studies of reading tests with hopes of defining components of comprehension. In Davis' (1972, p. 655) consideration of psychometric research on comprehension in reading, it was stated that "a composite of at least five or six underlying mental skills" constitutes comprehension.

A close examination of Davis's (1968) mental skills reveals there may exist some overlap or interaction among skills. Specifically, four of these skills may be subsumed under the other four: "recalling word meanings" can be considered as assumed in the skill of "finding answers explicitly or in paraphrase," "drawing inferences about the meaning of a word from context" is closely aligned to "drawing inferences from the context," "identifying a writer's technique" seems to be involved with "recognizing a writer's purpose, tone and mood;" and it seems feasible to reason that "weaving together ideas in the content" may be dependent to some degree upon the ability to "follow the structure of a passage."

The second path, considering comprehension in terms of grammatical structure or parts of speech, has generally been pursued by researchers through the use of a deletion technique (cloze or blackout). These studies (Weaver & Bickley, 1967a, 1967b, and 1967c; Fleming Ohmacht, & Niles, 1972; Ohmacht & Fleming, 1973) have produced results indicating a variety of roles played by certain parts of speech and grammatical relations. One finding that has been consistently produced is that the deletion of conceptual information in the form of nouns has the greatest deleterious effect upon comprehension.

The linguistic theories and language analysis techniques of Chomsky (1957, 1965, 1968), Katz and Fodor (1963) and others have figured prominently in recent studies of the structure of language but have been largely ignored in the analysis of reading comprehension.

A relatively new basis for considering language structure is that of Fillmore's (1968) case grammar. Fillmore derived his system on the basis of adult language usage. Therefore, it might be advantageous to consider this system as an analytical framework within which to view the mature reading comprehension process.

In the case grammar conceived by Fillmore, semantic relations are abstracted from the process of affixation. Fillmore proposed that there is a universal set of concepts expressed in all languages by either affixation or word order. In the English language, these casemeanings are primarily expressed by prepositions and word order, Fillmore's case grammar is much more versatile than other case grammars largely because the semantic concepts are distinct from any particular means of expression or any particular grammatical relation. In comparision to other linguistic system, the case grammar of Fillmore is more objective.

The immediate constituents of a sentence are not subject and predicate, but modality and proposition. Modality consists of tense aspect, mood, negation, and other factions which are not fully developed in Fillmore's (1968) paper. The proposition expands into sentence types, each consisting of a verb (V) plus some combination of cases. Each case is composed of a marker (k) and noun phrase (NP). Although the basics of Fillmore's case grammar were defined in his paper, the deep structure rules were not fully specified. Brown (1973) has formulated a set of rules based on Fillmore's discussion. It was with this system that an attempt was made to analyze those "incomplete" sentences in reading comprehension tests called multiple-choice items.

Two predictions were made: (1) since Fillmore's expansion of each case ultimately involved the use of a noun phrase, the two parts of the multiple-choice test item, stem and foil, will be found to stress noun phrases; and (2) there will be distinct differences in the complexity of semantic structure according to the classiciation of the comprehension item.

## METHOD

The questions analyzed were randomly selected from each of three reading tests intended for use with the mature reader. The selection cut-off point was to obtain approximately a third of the total number of test items intended to measure reading comprehension. The results were that of 40 items on the Davis Reading Test, 18 were selected; of 20 items on the Spache Diagnostic Reading Scale-Survey Portion, 10 were selected; and of 36 items on the Nelson-Denny Reading Test, 12 were selected. This resulted in 40 items to be analyzed.

Each item was classified as being mainly concerned with one of four of Davis's (1968) mental skills. If the question requires the reader to draw inferences from the foregoing passage, it was labeled a Type I question. A Type II question was one which required the reader to answer explicitly or merely in paraphrase. A Type III question required the reader to recognize the writer's purpose, attitude, tone, or mood, and a Type IV question concerned the reader's ability to follow the structure of the passage.

Each item was subjected to a semantic analysis using the system proposed in Fillmore's case grammar. The case concepts and deep structure rules are defined in Figure 1. All types of test items were compared to each other. Whenever a case was found to exist in an item type with 80% frequency, it was considered the dominant case. If a case concept obtained 25% frequency within a type of test item, it was noted following a slash mark behind the higher frequency case concept. Only the proposition portion of the sentence was analyzed since the modality portion is a highly independent variable.

## RESULTS

Upon classifying the randomly selected items it was found that only those from the Davis Reading Test fit into each of the classifications: 4, Type I; 6, Type II; 7, Type III; but only 1, Type IV. The items from the Diagnostic Survey fell into two classifications: 6, Type II, and 4, Type IV. Likewise, items from the Nelson-Denny fell into two classifications: 6, Type I, and 6, Type II. The Davis Reading Test was the only one of the three to have the Type III mental skill represented, but all three tests had in common items of the Type II classification.

### Similarities and Differences in Semantic Design between Types of Test Items

The following semantic designs were found to exist for each of the four types of each items:

TYPE I V + A/I + K' + S' (V + D/O + FOILS = L/I)
TYPE II V + A/I + L + FOILS = O/F
TYPE III V + D + I + F + FOILS = O
TYPE IV V + I + L + K' + FOILS = S' (Each a different semantic pattern)

K' marks a shift in emphasis and S' denotes a subsumed or embedded secondary sentence. The S' consisted of an M' and P.'

The five Type IV items were the most consistent of the four types. Each of the foils had its own separate semantic design. For example, within one Type IV item the S' patterns were as follows:

1. V + F + O + L + F + I
2. V + I + L + F + K' + O + L
3. V + I + F + K' + S" (V + O + F + L)
4. V + O + L + K' + S" ( V + F + $O_1$ $O_2$ )

It seems that each type of item has a different semantic design. However, commonalities, although subtle, do exist, between these design. For instance, within each there is a predominance of the instruumental (I) case. Then, between Type II and Type III, the case lead one behind the other into the single case foils. The single case foil is also found in Type I test items. But there the resembalance to Type II and III stops. Both Type I and Type IV have a shift in emphasis (K') to a subsumed sentence (S'), but in Type IV the S' is each foil of the test item.

The complexity of the semantic design of each type of test item varies. Those of least complexity seem to be Type II and Type III, where there are two or three cases found before the foils and the foils consisting of one of two cases. Type I's semantic design appears increased in the degree of complexity, involveing a shift in the emphasis to a subsumed sentence wherein the foils are found to consist of one of two cases. A drastic increase in complexity is to be found in the semantic design of Type IV test items. Here not only is there a shift in emphasis, but it is to several subsumed sentences, each being of a different semantic design.

### The Results in Relation to the Predictions

The first prediction that multiple-choice reading comprehension test items would consist of two parts, each stressing noun phrases, certainly is confirmed but to a different extent for the different types of test items. The smallest amount of difference between stem and foil exists in Type II and III, in which the stem consists of two of three cases and leads to the coice of foils of one case (in Type III) or one of two cases (in Type II).

In Type I the foils are comparable to those found in Types II and

III, where there is a single case or one of two cases present. However, the Type I stem's consist of a shift in emphasis to an incomplete subsumed sentence usually consisting of another verb and one of two cases. Type IV item stems are similar to Type I stems with the shift in emphasis but also usually have one more case represented. The foils of Type IV stems are found to contain as many or more cases than the stem. Sometimes, there is even a second shift in emphasis to a second subsumed sentence.

As for the second prediction of distinct differences existing in the complexity of semantic structure in each type of test item, it would seem that this is half confirmed and half dispelled. The only distinct differences between Type II and Type III items rest in the cases--the semantic pattern otherwise being very similar. However, the differences between Types II and III compared to Types I and IV are obvious: (a) Both I and IV make use of shift in emphasis; neither II nor III does (b) Both I and IV contain a subsumed senten; neither II nor III does. But then Types I and IV have a distinct difference evident also. This difference is the complexity and variety of semantic structure of the subsumed sentence; Type IV's subsumed sentences are foils, each of which has a different semantic pattern.

### Implications--Thoery and Testing

**Point 1** : With the consideration of nouns and noun phrases as conceptual nodes and modules of information used by the reader in the process of comprehending, then the finding that different types of test items (based on different mental skills) consist of varying amount and emphasis of nouns and noun phrases leading to the conclusion that these different test items are requiring varying degrees of complexity in the mental manipulation of information read. So what becomes measured is the reader's ability to manipulate (or juggle) varying numbers of these nodes of conceptual information and the extent to which he or she can decipher the complexity with which this information is put together. Overall, it is evident that there is a varying deep structure associated with different types of reading comprehension test items. The question remains as to whether this is getting at true comprehension abilities or is just increasing the complexity required of manipulating nodes and modules of conceptual information.

**Point 2**: If comprehension test items are composed with predominate emphasis upon the inanimate cases of I and O instead of the animate cases of A and D, this may increase the difficulty of the items to readers who have a tendency to project themselves into what they read.

**Point 3**: Reading comprehension test items with a high difficulty index could very possibly consist of the Type I or Type IV semantic designs wherein there seems to be a confounding of complexity and the number of cases involved.

**Point 4**: Since Fillmore's case grammar is based upon the structure of adult language and is a highly logical system, the finding of varying semantic designs for each type of test item lends credulity to the existence of different mental operations involved in tests of reading comprehension. Tests of reading comprehension might profit from an analysis of the semantic designs of their best items to determine if there might exist a predominance of one design over others, the implication being that if one design is stressed over others then a reader properly analyzing that design could become "test-wise" and inflate his or her score.

**Point 5**: Looking at reading comprehension through the semantic analysis of test items supposedly indicative of comprehending, it is possible that one could gain some insight concerning to the information processing involved in what is labelled "comprehension." The current analysis would seem to indicate a major role ot conceptual information in the inanimate case. Two other factors also figure prominently in comprehension as inferred from the semantic structure of types of test items: (1) simple mental manipulation of conceptual information (Type II and III), and (2) complex mental manipulation of conceptual information (Types I and IV).

## Deep Structure Rules of Case Grammar (Brown, 1973)

Sentence (S) = Modality (M) + Proposition
Modality (M) = Tense (Neg), etc.

| | | | |
|---|---|---|---|
| Proposition | V + A | A | K + NP |
| | V + O | I | |
| | V + D | D | |
| | etc. | F | |
| | V + A + O | L | |
| | V + A + D | O | |
| | etc. | | |

NP = d + N (where 'D' is the determiner)

**Figure 1:**

### Fillmore's Case Concepts Defined
### Adopted from Fillmore (1968)

| Case Name | Definitions |
|---|---|
| Agent (A) | The typically animate, perceived instigator of action; involves notions of both causality and intention (or at least responsibility.) |
| Instrument (I) | The inaminate force or object causally involved in the state or action named by the verb––the immediate cause or event. |
| Dative (D) | The animate being affected by the state or action named by the verb. |
| Factitive (F) | The object or being resulting from the state or action named by the verb––designates a stopping point. |
| Locative (L) | The location or spatial orientation of the state or action named by the verb. |
| Object (O) | The entity which moves or undergoes change––the semantically most neutral case; role in the state or action is dependent upon the meaning of the verb. |

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# SOME COMPARISONS BETWEEN THE DOLCH BASIC SIGHT VOCABULARY AND THE WORD LIST FOR THE 1970s

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## ABSTRACT

The purpose of the study was to determine whether or not the word list for the 1970s accounted for a statistically greater proportion of words in written materials for children and adults than the Dolch list. The American Heritage Intermediate Corpus and the Kucera-Francis Corpus were used for the comparisons. The results revealed that the word list for the 1970s accounted for a significantly greater proportion of words than the Dolch list in materials intended for both children and adults.

The results of this study offer evidence that the word list for the 1970s accounts for a significantly greater proportion of words than the Dolch list in written materials encountered by both children and adults. If one uses the criterion of frequency, it is clear that the word list for the 1970s is statistically superior to the Dolch list. Not surprisingly, the list for the 1970s accounted for a greater percentage of words than the Dolch list in both the AHI Corpus and the Kucera-Francis Corpus. It should be pointed out, however, that both lists accounted for over 50% of the words used in materials for children and adults.

Several conclusions are justified from the results of this study. First, the word list for the 1970s is, in fact, more useful than the Dolch list if the criterion of frequency is employed. This conclusion was also supported by several informal checks of different basal readers series frequently used in today's schools. Second, the finding that the Dolch list still accounts for over 55% of the words used in materials written for children in grades three through nine and for over 50% of the words frequently used in adult level materials offers little evidence to critics who claim that the Dolch list is passé. Certainly the vast majority of the Dolch words have withstood the test of time. Finally, although the word list for the 1970s is *statistically* significant to the Dolch list, one must question the practical significance of the difference.

# MAKING A VARIETY OF PARALLEL TESTS

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Evaluation of learning usually takes one of two basic patterns: (a) assessment of the total knowledge or skill possessed at a given time, or (b) an estimate of the amount of gain in skill or knowledge made during a fixed period of time. A measurement instrument designed to estimate total learning may be defended as a device for placement or diagnosis or it may predict degree of success in a relevant endeavor; it rarely is valid as a measure of the "grade" for a specific class or course because what a student knew when he began cannot be separated from that which he learned in the present experience.

On the other hand, evaluation of the degree of gain during a given learning period is a valid basis for grading, but its effectiveness requires a series of parallel tests which measure the objectives of the learning experience. It is to the problem of techniques for constructing parallel tests that this discussion addresses itself.

Tests may measure facts accumulated or they may measure skills in the use of those facts. Tests designed to measure facts usually depend on the sampling technique: if 200 facts are within the objectives, it is supposed that the recall of any 50 of those facts, selected at random, will measure the knowledge of the whole 200. Although the supposition is not practically true (such a random group can be very easy or impossibly hard for an individual) the premise is a logical one. The number of random facts selected should be reasonably large; out of a possible 200, perhaps 50 questions are more valid as a measure than are 20. Granted the premise, parallel tests of fact are reasonably easy to construct and most students will accept them since they are an acknowledged part of the "school game." The learning measured by such tests is often rote and its value is a subject requiring longer discussion than would be relevant here.

One of the easy ways to produce an almost infinite number of parallel testing experiences in the recall of facts, but one which seems to produce maximum student acceptance because of its form, is the "Roll'em" Test. The facts to be covered are listed; it is usually better to let the class make the list (with a little "iron-gloving" on the teacher's part) since their list is usually more formidable than the teacher's. The list is classified into similarities – authors, titles, characters, literary types, for example, and the master list is printed in groups of 11, numbered from two through 12. Of course the students have copies of the list for their preparation, and the studying for the test is probably more of an objective for the instructor than is the test itself.

When a student feels able to challenge the test, he rolls a pair of dice. If a seven comes up, item seven in each of the groups is identified. On a retest, the same number, or any other, may be rolled – the student never knows. One fundamental problem is to prevent the student's limiting his learning to a single, rote answer (a problem not strange to other kinds of tests); a partial cure can work be stipulating the kind of identification answer that must be given. Some possibilities are to require that types of literature be identified by a title, author, and/or character already on the student's test list. Another technique is to force the student to change the grammatical format of his learning: identifications must be done by a question (with a clue) rather than in a declarative statement – not *Nathaniel Hawthorne wrote THE SCARLET LETTER* but *THE SCARLET LETTER was written by Nathaniel whom?* or *How does a Christmas card in a red envelope remind you of a book by Nathaniel Hawthorne?* A third technique is to, require the identification be in a complex sentence, the dependent clause of which may (still in the same subject) be a date, a genre, a theme, a contemporary, even an incident. Of course the student will know the kinds of information he may be asked to furnish, but he never would be asked for all possible answers. Experience shows that students prepare thoroughly for the test (especially for the second try), and the element of chance adds some fun to the testing task.

Although parallel tests which measure skills and concepts are more difficult to construct, the learning which they do measure is of a sort highly praised in today's schools. The procedure suggested here makes use of Bloom's (1956) taxonomy of learning as a device for constructing the tests. Since "Every shoemaker should stick to his last," the illustrations given are in the discipline which is most familiar to the writer; others, familiar with different areas of study, will see how the principle can be adapted to their fields.

Bloom suggests seven levels of learning; those levels are paraphrased here and simplified. It is hoped they are not traduced. At the bottom is *rote learning*; successively higher levels are *translation, recognition* among a group of suggested examples, *construction* of one's own example, *synthesis* of concepts, the construction of a *standard*, and *evaluation* or critical judgment. *Rote learning*, the lowest of these levels, may be skipped as a type of accomplishment, although traditional in schools, which is of minimum value in treating skills and concepts.

Parallel tests measuring learning at level three, *recognition*, are rather easy to construct. The task is to find an example of a term or concept among a given body of illustrations. The format of the test consists of an unchanging answer sheet which lists the terms or concepts being measured; the name is followed by a blank in which the student copies an example found on a separate page of illustrations. The task remains the same; thus the tests are parallel. Only the illustrations are changed in order to alter the test; all that is necessary is a succession of illustration sheets.

In Language Arts, this form of measurement lends itself most easily to items with a high factual basis: grammar, poetic forms, even spelling rules. A test in traditional grammar would have a problem such as "Sentence ____________ is a compound sentence" or "The word ____________ in sentence ____________ is a strong verb in the past tense." Modern (structural) grammar might ask "Sentence ____________ illustrates the D + N + Aux + Verb - en + D + N + D + N pattern." A test in poetic forms could contain items such as "Line ____________ in example ____________ is written in iambic pentameter" or "The words ____________ and ____________ in example ____________ illustrate feminine rhyme." The format can be compacted by using a tabular arrangement for similar questions.

Illustration sheets can be assembled; the number of parallel forms will be determined only by the energy of the person making the test. Each set of illustrations should have at least one example of the items on the answer sheet although the student may be correct if he answers "None" when no illustration is to be found. (In point of fact, some "none" answers are probably a valid part of the test; it requires as much perception to recognize the absence of an illustration as its presence.) Doubtless some of the alternative illustration sheets will be easier than others because the examples will vary in difficulty, but the task is always the same.

Such tests can be used as pre- and post-study exercises; from its nature the pre-test becomes diagnostic. Each time the test is taken and checked (if the teacher can check it with the student) is a valid learning experience. Enough parallel forms can be constructed so that students can challenge the unit whenever they feel competent. Some care needs to be exercised with the sheets of illustration, but absolute test security is not necessary. If the teacher has six possible forms, a student who secured copies of all of them could make the test into a memorization exercise, but the constant possibility that the teacher may introduce a seventh form encourages the student to recognize, not memorize, as he learns.

Another use of the Bloom taxonomy can provide parallel tests; this technique is especially useful when concepts are the subject for study. Such tests deal with a limited number of concepts; each concept appears in each from of the test but the level of the answer varies. Levels 2, 3, and 4 of th e Bloom taxonomy may be used as the basis of the variation. A given concept may be *translated* – stated in the students' words; it may be *recognized* among a series of illustrations; or an example of the concept may be created by the student. Concepts stated in the teacher's objectives and known to the students appear in each form of the test; the variation is in the level of learning used in the answer.

The procedure outlined below will produce three tests which are relatively parallel; it is possible that tests of this type can best be produced in multiples of three. Students can handle such tests more confidently if they recognize the task which they are being asked to do; they will benefit from being taught to perform at different levels of learning.

The teacher selects a concept which was considered important enough to be included in the objectives. It is easiest to write the concept at the top of a large card or half a sheet of paper. Then the teacher constructs a question-exercise which will measure the concept at each of the three levels of performance: *translation*, *recognition*, and *creation*. The concepts are randomly put into three piles. Test 1 consists of *translation* quations from pile one, *recognition* questions form pile two, and *creation* questions form pile three. Questions used are checked as the test is made. For Test 2, the concepts are resorted; a few may have to be moved since they happed to fall into the same piles as they did in Test 1, but the test is made in the same way. Test 3 makes use of the remaining questions on the concept sheets.

An example may help to make the process clear. Suppose the concept is the way long and short vowels are usually spelled in English. *Translation* question: Suppose you were going to explain to a fourth grader how he might guess the pronunciation of a vowel found in his reading. What would you say?*Recognition* question: There are four ways by which the length of the vowel in a word is usually conveyed in English spelling. There are at least two examples of each of these four principles in the sentences below. Write the four formulas using the symbol "V" for vowel, "C" for consonant, and naming the quality of the vowel produced by the formula. After the formula, give two examples as found in the sentence. *Creation* question: In English, there are four principles of spelling generally used to show the length of the vowel. State the four principles and think of two examples for each; the examples used must have something to do with politics.

A problem to be avoided is the turning of both the *translation* and *creation* questions into *rote* answers. Attention to examples above will suggest some possible protective devices. The *translation* question sets up a situation in reading, not writing, and stipulates an audience. The *creation* question limits the sematic nature of the examples.

It is possible to make tests at the three highest levels of learning as suggested by Bloom (1956). At the present time, the writer sees no way of making parallel tests at these levels; yet, in a very real sense, when the task is kept the same but the example is varied, tests do become parallel.

*Synthesis* and construction of a *standard* question: Below is a poem by a well known American author; you may suppose that he wrote this poem in the very best way he knew how; he did what he thought would make the best possible poem. After you have read this poem, make some statements which you think the author might have made in order to convey what he thought good and/or bad in writing poetry. Comment on rhyme, rythm, word choice, imagery, tone, and theme.

*Evaluation* question: Here are two poems written by American poets; suppose that each of the poets wrote as well as he could in his poem. Take either of the poems and, from what you see in that poem, figure out what you think the poet believed about the art of writing. Consider poetic form, word choice, imagery, and theme. Then suppose you are the poet and have been given the other poem to critize. What would he say?

Parallel tests can be constructed. They can be teacher-made and still be educationally valid. At present the writer does not see any way by which the sorts of tests outlined above can be made objective and/or key-graded. It is possible that other teachers, more sophisticated in the test making process and the use of electronic machinery, can see such possibilities.

Tests such as those outlined above have some advantages: (a) they stress the specific objectives of instruction, (b) the element of chance is cut to a minimum, and (c) students are encouraged to make their learning flexible. No student is failed; with parallel forms, he may try again until he has reached a level of performance which satisfies him. Perhaps most helpful of all, parallel tests offer a way to distinguish between the student who already knew it and the one who learned it this time, through the help of the teacher.

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# MATURE READERS' NELSON–DENNY COMPREHENSION SCORES WITH AND WITHOUT SYNTACTICALLY– AND SEMANTICALLY–SIMPLIFIED ITEM–STEMS AND/OR ITEM–FOILS

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The measurement of reading comprehension continues to be an important issue in reading research, with both practitioners and researchers asking, "How do you measure comprehension, and what type or types of questions are most appropriate?" In an attempt to answer these questions, Bormuth (1969) has offered operational definitions of various types of comprehension questions. While his theory is quite complicated and relies heavily on tranformations-generative grammar, it does point out the important role of structural linguistics in writing questions. Crombach (1946), Gilmour and Gray (1942), Gritten and Johnson (1941), and Gustav (1963) have published studies that have implications for multiple-choice questions; and Murdock (1963) has shown the effect of the number of response alternatives on test scores. In addition, Tuinman (1972) has investigated the effect of inactive distractors on test scores, with implications for test construction and reliability.

If, as one might assume, the primary purpose of a comprehension test is to assess the level of understanding gained from reading stimulus materials, then it is acutely important to control the influence of the question. The question should primarily in two ways: (a) is should serve as a marker identifying for the reader the information desired, and (b) it should serve as a statement describing how that information should be transmitted. Anything that hampers or obscures these two functions constitutes resistance to the information flow and affects the accuracy of the output.

## Purpose of the Study

The purpose of the study was to investigate the effect of semantic and syntactic simplification in comprehension questions on students' scores on the comprehension subtest of the Nelson-Denny Reading Test. The study is not intended as an attack on the Nelson-Denny test, and, inasmuch as the test is normed on the basis of both the stimulus paragraphs and the questions, the findings have few implications for that instrument. The Nelson-Denny Reading Test was chosen for pragmatic purposes only, that is, it had been standardized, it had two forms, and it was an instrument acceptable by the schools selected for testing.

## Method

### Subjects

One hundred twenty subjects were randomly selected from an available population of 11th and 12th grade students in a small, midwestern community. According to school records, the populations represented a heterogeneous sample of all levels of ability and contained approximately the same number of males and females.

### Instruments

For the purposes of the study, three alternate versions were prepared for each of Forms A and B of the Nelson-Denny Reading Test. The procedure generated eight separate test forms, described below.

Forms $A_1$ and $B_1$ were identical to the standardized test except that they were reproduced and placed under a cover identical in appearance to that of the alternate versions. Format and typography were not altered.

Forms $A_2$ and $B_2$ were identical to forms A and B , except that they had changed in item stems. Generally, these were changes in word order or the substitution of a synonym for a difficult word. For example, the item stem, "Swinburne compensated for his slight stature by" was revised to read, "Swinburne made up for his small size by." Item stems which in the original version were written in a straightforward manner with easy vocabulary were not changed.

Form $A_3$ and $B_3$ were identical to forms $A_1$ and $B_1$, except that they had changes in item foils. Again, changes were restricted to word order revisions or synonym substitutions. Every effort was made to avoid substantive changes in content. In addition, the order of answer choices was not changed. For example, the question in the original version, "The development of Greek poetry can best be described as" had the following answer choices: "(1) static, (2) retrogressive, (3) superficial, (4) esoteric, (5) progressive." The revised answer choices appeared as: "(1) unchanging, (2) gradually getting worse, (3) simple-minded, (4) exotic, (5)gradually getting better." Some foils were left intact since they were already stated in easy language with uncomplicated structure.

Forms $A_4$ and $B_4$ consisted of the revised stems from $A_2$ and $B_2$ combined with the revised foils from $A_3$ and $B_3$. The differences between the original versions and the versions with revised stems and foils can be observed in the examples below, taken from version $B_4$.

*Original:* 2. What cause for congratulation did the soldiers have?
    1. A renowned leader.
    2. Good horses.
    3. Enemy sentinels were asleep.
    4. Artillery and baggage were saved.
    5. They emerged from the city unmolested.

*Revised:* 2. Why might the soldiers have congratulated themselves?
    1. They had a famous leader.
    2. They had good horses.
    3. The enemy sentinels were asleep.

## Figure 1

## UNREVISED AND REVISED TEST-FORM COMBINATIONS AND ORDERS:

**ORDERS: TOTAL N = 120**

| | N = 40 | N = 40 | N = 40 |
|---|---|---|---|
| N = 10 Each cell | $A_1 + B_2$ | $A_1 + B_3$ | $A_1 + B_4$ |
| N = 10 Each cell | $B_2 + A_1$ | $B_3 + A_1$ | $B_4 + A_1$ |
| N = 10 Each cell | $B_1 + A_2$ | $B_1 + A_3$ | $B_1 + A_4$ |
| N = 10 Each cell | $A_2 + B_1$ | $A_3 + B_1$ | $A_4 + B_1$ |

A, B = Nelson-Denny Test Forms.
1 = Unrevised
2 = With simplified item stems
3 = With simplified item foils
4 = With simplified item stems and item foils

4. They saved their artillery and baggage.
5. They had escaped from their enemy.

## Procedures

To measure the effects of the three question-revision systems on the comprehension scores of an appropriate test population, original and revised versions of the two forms of the Nelson-Denny Reading Test, Comprehension, were administered to 120 students who were either 11th or 12th graders in the following manner: (a) an unrevised version of the test and a version in which the item *stems* had been simplified was given to 40 Ss; (b) 40 more took an unrevised version and a version in which the item *foils* had been simplified; and (c) a final 40 took an unrevised version and a version in which both the item stems and the item foils had been simplified. Within each group of 40, half the students (20) took an unrevised Form B and a revised Form A, with half of each twenty (10) taking the two tests in a reverse order (first A, then B) from the other half (first B, then A). Figure 1 below details this pattern.

## Results

The first step of the analysis was a comparison of the difficulty levels of the unrevised versions ($A_1$ and $B_1$) of the Nelson-Denny Reading Test. The results of this comparison are reported in Table 1. As can be observed, there were no significant differences between reader scores on the two unrevised forms. Consequently, the data for the A and B forms were pooled for all further comparisons, that is, versions $A_1$ and $B_1$ = Form 1, $A_2$ and $B_2$ = Form 2, and so on.

Table 2 reports the summary statistics for the reaminder of the analysis. Each of the three revised versions resulted in significantly higher mean comprehension score levels than did the unrevised versions.

It may be noted that the mean revised-version over original-version differences are greater for foil changes than for stem changes and are greater yet for combined foil and stem changes. No statistical comparisons were made between these summary data, however, since no attempt had been made to control the relative amounts of change from revised version to revised version.

Table 1

SUMMARY STATISTICS: SUBJECTS' MEAN SCORES ON UNREVISED FORM A
UNREVISED FORM B OF THE NELSON-DENNY READING TEST

| Form | N | Means | S.D. | S.E. | Mean Differences | z-Scores |
|---|---|---|---|---|---|---|
| Form A | 60 | 14. 8 | 4.786 | 0.623 | + 1.28 | + 1.29* |
| Form B | 60 | 13. 52 | 5.930 | 0.772 | – 1.28 | – 1.29* |

* N.S.D. (1.96 required, two-tailed test)

## Table 2

### SUMMARY STATISTICS: SUBJECTS' MEAN SCORES ON ORIGINAL AND REVISED VERSIONS OF THE NELSON–DENNY READING TEST, FORMS A AND B

| Combinations | N | Means on Originals | S.D.'s on Originals | Means on Revised Versions | S.D's on Revised Versions | Revised-Version over Original-Version Mean Differences | Revised-Version over Original-Version z-Scores |
|---|---|---|---|---|---|---|---|
| Original and with changed stems | 40 | 14.475 | 5.268 | 16.550 | 4.868 | 2.075 | 5.372* |
| Original and with changed foils | 40 | 14.050 | 5.701 | 16.450 | 5.074 | 2.400 | 3.467* |
| Original and with changed stems and foils | 40 | 13.950 | 5.305 | 16.850 | 5.308 | 2.900 | 4.623* |
| All Cases: Original and with changes *per se* | 120 | 14.158 | 5.423 | 16.617 | 5.087 | 2.458 | 6.886* |

$p < .001$ (one-tailed tests)

## Discussion and Conclusions

The data from the study clearly indicate that semantic and syntactic simplification of the comprehension questions on the Nelson-Denny Reading Test resulted in higher mean scores for the population sampled. However, since no control was imposed on the type and percentage of semantic and syntactic change in the various experimental versions, it would be illadvised to make generalizations based on these findings. Nevertheless, results do suggest that when measuring comprehension, further attention should be given to the importance of the questions. Such research is particularly important in the case of criterion-referenced tests. If, as stated earlier, the primary purpose of the test is to assess the level of understanding gained from reading stimulus materials, it is essential to restrict the influence of the questions. The questions should serve only as a vehicle for identifying and transmitting pertinent information. Of course, the ideal comprehension question is, "Do you understand the material?" with answer choices: Yes ○ No ○ . However, until we have some convergence of opinion as to the meaning of the verb "understand," it will be necessary to estimate its parameters by asking questions.

Since norm-referenced tests are normed on the basis of both questions and stimulus materials, the implications of studies such as this are limited. However, it should be pointed out that results from normed tests in which questions have not been properly controlled may more accurately reflect a student's ability to comprehend test questions than they do his or her ability to comprehend the stimulus material being tested. In such cases, one can generalize only about the student's ability to answer certain types of questions, rather than about how well the student understands the materials.

The results of this study add support to that growing body of research indicating a need for further refinement of comprehension questions. In particular, the study demonstrates the importance of semantic and syntactic features in comprehension questions: (1) Which type or types of semantic and syntactic structures are most easily processed? (2) Which type or types of questions have the greatest tranfer to the real world, that is, which questions represent those actually asked by the student in understanding reading materials encountered outside the testing situation?

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# ABILITY OF STUDENTS TO IDENTIFY CORRECT RESPONSES BEFORE READING: A REPLICATION

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Preston (1964) reported that a sample of University of Pennsylvania freshmen were able to recognize correct answers without reading the passages on which the questions were based. The investigator, having taught college reading courses at the University of Pennsylvania and another college in the Philadelphia area, wondered if the test wiseness revealed in Preston's study would also be manifested by a sample of college freshmen of average academic aptitude as measured by the verbal score of the Scholastic Aptitude Test.

The study, then, is a replication of Preston's study using a different population. It tests the same hypotheses, namely,

> (a) Students as a group score better than chance on a reading comprehension test when deprived of the opportunity of reading the passages on which the items are based. (b) Individual differences in reading comprehension, tested under these conditions, are positively related to reading ability as conventionally measured; academic aptitude as measured by the verbal score of the Scholastic Aptitude Test (V–SAT); scholastic performance as measured by class standing in high school (high-school quintile) and by grade-point average earned during the first semester of college (GPA); and sex (Preston, 1964, p. 181).

## Procedure

An "Information Test" was constructed using the first 30 comprehension items of the Cooperative English Test: Test C2: Reading Comprehension (Higher Level), Form R (1950). The passages which the items were intended to test were not included in the test. The directions for the test were:

> In taking this test now, you will be "warming up" for the reading exercises which will follow. Check what you consider to be the correct response to each item. You

> will have absolutely no basis for knowing the correct answers for some of the items. In any case, make the most of your experience in taking this kind of test, and check what you imagine the test maker is fishing for! (Preston, 1964, p. 181.)

The stems of each of the 30 items were changed slightly for better clarity. For example, the original stem of the first item, which read "The main thought of this passage is that," was changed to read "A certain reading test contains a passage about photography. In all probability the main thought of this passage is that" (Preston, 1964, p. 181).

Preston gave his test at the beginning of the fall semester in 1963. The Admissions Office at the University of Pennsylvania reported that the mean V–SAT score for the entering freshmen in Fall 1963 was 609.

The investigator randomly selected four sections (98 students) of the freshmen English course, English 1, at the beginning of the fall term of the 1972-73 academic year at the Pennsylvania State University Ogontz Campus to use in replicating Preston's study. The 98 students (46 women and 52 men) were considered to be representative of the freshmen at the Ogontz Campus because the mean of their V–SAT scores was 465, standard deviation 78. The mean of 691 Ogontz freshmen's V–SAT scores was 459, standard deviation 90.

First, the "Information Test" or passageless test was administered to the 98 freshmen. Then, the students took the same form of the test in the usual manner (with the passages).

## Findings

The first hypothesis, students as a group score better than chance on a passageless reading comprehension test, was supported. The expected score on the 30-item passageless test was six correct items, since there were five options per item. The majority of students (56%), as in Preston's study (77%), achieved scores greater than six. The significance of these scores was tested in two ways. First, the observed mean, 7.27, was compared with the expected mean of 6.0 on the basis of chance. As in Preston's study, the observed mean was significantly greater than the expected mean ($t = 4.70$, $p < .001$). Secondly, a count was made of the number of students whose scores were significantly greater than chance. Since the expected proportion was .200, an observed

# TABLE 1

## Correlation Coefficients between Passageless Test Scores and Other Measures

| Measure | Preston (1964) | | | Replication | | |
|---|---|---|---|---|---|---|
| | r | 95% class limits | Discriminated between highest & lowest scores on passageless test | r | 95% class limits | Discriminated between highest & lowest scores on passageless test |
| Cooperative English | | | | | | |
| Level of comprehension, item 1-30 | .20* | .02-.37 | yes | .44** | .28-.58 | yes** |
| Level of comprehension, all items | .26* | .07-.43 | yes | .50** | .34-.63 | yes** |
| Vocabulary | .13 | | | .47** | .30-.61 | yes** |
| Speed of comprehension | .32* | .13-.46 | yes | .58** | .43-.69 | yes** |
| V–SAT | .02 | | yes | .45** | .27-.59 | yes** |
| High school quintile | .02 | | yes | .15 | | |
| GPA | .02 | | | .26** | .07-.44 | |

*$p < .05$
**$p < .01$

proportion of .367 (or a score of 11) was needed in order to reject the hypothesis for a given individual at-the .05 level that a real difference did not exist. Eleven students achieved scores at or above this level. Fisher's method (1958, p. 99-101) was used to combine the 98 probability figures which ranged from .0009 to .9558. The combined probabilities yielded a Chi Square of 10.23 with 196 degrees of freedom which, as in Preston's study, was consederably better than chance ($p < .001$). That is, even though 87 of the probability figures were greater than .05, individual scores considered in the aggregate were significantly greater than chance. Thus, the first hypothesis was confirmed just as it was in Preston's study.

Parts of the second hypothesis, passageless test scores are positively related to scores for selected measures, were supported. Table 1 reports the correlation coefficients between the passageless test scores and scores for other measures for Preston's study as well as for the replication. As to sex differences, the mean of the men's scores (7.29) on the passageless test is not significantly greater than that of the women's scores (7.02). This is contrary to Preston's study, which reported that the men had significantly higher scores than the women ($p < .05$). Table 1 also reports the variables which significantly differentiate the students with scores greater than chance (scores of 11 or more) on the passageless test from students with the lowest scores for both studies. Thus, parts of the second hypothesis have been confirmed and other parts have been rejected as in Preston's study, but the findings are not the same for both studies.

## Discussion and Conclusions

This study has revealed findings similar to those reported in Preston's original study (1964), that is, students are able to recognize correct answers without reading passages on which the questions are based. However, the correlation coefficients between passageless test scores and other measures are larger than those which have been reported by Preston. The higher correlations in the replication preclude interpretation of the lower correlations reported in Preston's study as evidence that comprehension questions do not measure reading comprehension when there are no passages or that no reliable measure has taken place when the passageless test is administered (Tuinman, 1973-74).

The higher correlations reported in the study can possibly be explained in two ways. First, students with average verbal aptitude may develop a test-wiseness strategy which they employ when taking standardized reading tests. If this is so, students with average verbal aptitude may be aided by multiple-choice format questions, whereas students with high verbal aptitude may be penalized by this type of questioning. The explanation has been put forth by critics of both multiple-choice questions (e.g., Hoffmann, 1962) and standardized reading tests (e.g., Applebee, 1971). Studies which have investigated this theory, however, have noted the complexity of the problem (e.g., Millmann, 1966; Alker, Carlson, & Hermann, 1969). Secondly, it is possible that such a factor as verbal aptitude may influence students' differential responses to items of certain types (Weaver, Bickley, & Ford, 1969).

In view of the findings of this study, additional studies need to be undertaken. For example:

1. Preston's study needs to be replicated with different age groups and populations while controlling such factors as verbal aptitude and other characteristics which may distinguish between more able and less able students and using reading tests that are currently in use.
2. Preston's study should be replicated with two different forms of reading tests currently in use in order to determine if the correlations are forced, that is, one form of the reading test should be used for the passageless test and another form for test taking in the conventional sense.
3. Research concerning the evidence of and the teaching of test wiseness should control such variables as verbal aptitude and other characteristics which may distinguish between more able and less able students.

Perhaps when these studies are conducted, educators will have a better understanding of test wiseness.

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# DESIGNING READING RATE RESEARCH

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Huey (1908) was one of the first to point out the great practical and pedagogical importance of reading rate. Research on reading rate has generally left much to be desired because too many important factors have not been controlled. The primary purpose of this article is to summarize some of the more important factors that deserve careful consideration when designing reading rate research.

## Comprehension

In research on rate, the most important factor to be considered is comprehension. Carver and Darby (1972-73) have cautioned that comprehension is an ambiguous term. They recommend that comprehension be divided into three components – efficienty, accuracy, and rate. Efficiency of comprehension was considered to be the product of the accuracy and rate. This conceptualization forces reading rate research to be more precise. Instead of asking the question, "What happens to comprehension when rate goes up?" the question can be rephrased more precisely as "What happens to the accuracy or efficiency of comprehension when rate goes up?" Recent research (Carver, 1974d) suggests that there is an optimal reading rate at which point efficiency of comprehension is maximized. As rate goes up, efficiency goes up until a maximum of efficiency is reached, and then efficiency decreases. However, as rate goes up, accuracy consistently goes down. There does not appear to be a good reason for lumping together the variables of efficiency and accuracy of comprehension in reading rate research.

## Measuring Accuracy

The assumption is sometimes made that an individual has accurately comprehended everything that was read while reading at some fantastically high rate (e.g., see Thomas, 1962). Usually, however, a test is developed to measure the accuracy of comprehension during reading. The problem is that these tests generally are developed using traditional psychometric procedures rather than using procedures designed to reflect what was gained during reading (Carver, 1972b, 1974a). It is likely that a knowledgeable individual will be able to answer most of the questions on most of the traditionally designed tests of reading comprehension without ever reading the passages themselves (see Carver, 1972c; Tuinman, 1973-74). Thus, in reading rate research it seems desirable that the test questions be administered to a comparable control group that has not had the opportunity to read. This will allow an evaluation to be made of what was really gained during time spent reading.

## Measuring Rate

Studies of reading rate which purport to be precise must consider the word length problem. Recent research has shown that college students read easy material faster than more difficult material when rate is measured by counting the actual number of words covered, but when rate is measured in standard length words (6 letter-spaces per word), the easy material tends to be read at approximately the same rate as the more difficult material (Carver, 1972a, 1974b; Miller & Coleman, 1972). If actual words per minute are used, then it erroneously appears that the readers are going faster on the easy material because the words tend to be shorter on the easy materials. When precision is required, the researcher does not use standard length words when measuring reading rate, then he should report the average word length of the material being used.

## Instructions for Reading

The instructions given to individuals in an experiment are undoubtedly one of the most crucial aspects of the research. If a group of individuals is given a 5,000 word passage and told that they are free to leave when they finish reading, then it sould be expected that the average reading rate will be much higher than it would be if the individuals were told that they would be given a 100-item test when they finished and that they must keep reading the passages and taking the test until they pass the test.

Individuals appear to read most materials at the optimal rate (Carver, 1974d). It seems important that the instructions for most experiments on reading rate be designed to allow the reader to read at his optimal or usual rate. If this theory regarding optimal rate is not used to guide the research design, the least that can be done is to recognize the importance of the instructions in terms of rate and to report these instructions in considerable detail.

## Ability-Difficulty Difference

If an average fifth grader is given a passage from an eighth-grade textbook, it is likely that he will have great difficulty understanding the passage and will have to reread sentences several times if he hopes to understand any of it. If an average eleventh grader is given the same eighth-grade passage, then the individual should be able to understand most of it when read at the eleventh grader's rate. Theory and data (Carver, 1974c, 1974d) suggest that individuals are likely to be able to understand most material that is below their own difficulty level when they read it at their usual reading rate. However, when individuals are given material at a level of difficulty that is above their own level of ability, then it is not likely that they will be able to understand what they are reading if they read it at their usual rate. Rate is likely to be affected by the difficulty level of the material when that level exceeds the reader's ability and when a mastery criterion is imposed. Therefore, it appears to be important that ability and difficulty levels be measured and controlled in rate studies. For example, if a study of the eye movements of good and poor readers in the fifth grade used fifth grade material, then it would be likely that the good readers were being given easy material to read and the poor readers were being given difficult material to read. A more interesting and appropriate study would be one in which the good and poor readers were given materials to read that were at least one level of difficulty below their ability level. If so, the differences between the good and poor readers could be more meaninfully interpreted. It seems possible that the good fifth-grade readers might read similarly to the poor ones if the good ones were also forces to read material that was at a difficulty level that they were not likely to understand. More precise measurement and control of ability-difficult differences seems to be highly desirable in future reading rate research.

## Discussion

Some of the more important factors that need to be considered in reading rate research are summarized above. Some of the reasons why more reading research should be conducted will now be discussed.

Carver (1974d) contends that reading rate is primarily limited by the rate at which an individual can understand sentences. He contends that an individual can be taught to skim words, but this will have no effect upon the time needed to process the words in a sentence and understand the thought. The minimum time needed to understand sentences is considered to be limited by intellectual ability, a factor that is not likely to be influenced by any educational treatment. An individual can be exposed to more educational experiences and thereby be more likely to understand more sentences the first time they are encountered, but the basic rate at which an individual can understand sentences is considered to be highly stable for materials at difficulty levels that are below the individual's ability level.

One of the most important implications of the above theory regarding rate is that teaching practices that focus upon increasing reading rate are likely to be counterproductive for most readers unless there is clearly an emphasis upon skimming words instead of understanding sentences. That is, the emphasis should not be upon getting the reader to abandon his normal reading rate but should be upon getting the reader to learn a new skill (i.e., skimming).

More research is needed to determine whether the rate at which individuals can understand sentences is limited by a factor such as general intellectual ability and is, therefore, not amenable to educational influences. If the rate of understanding sentences is limited by factors beyond the influence of education, then college instructional practices should probably be drastically modified to reflect this limitation. If the reading rate of individuals is not limited by factors beyond the control of education, then these factors deserve more thorough research. If the rate of understanding sentences can be increased by education, then instructional practices probably could become more effective in getting more people to understand sentences faster. Great practical benefits should accrue from a better theoretical understanding of the causes of between-individual differences in reading rate and the effects of within-individual changes in reading rate.

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# THE EFFECTS OF REST PAUSES ON READING TEST PERFORMANCE OF FOURTH–GRADE INTROVERTS AND EXTROVERTS

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## ABSTRACT

Research has indicated that test validity might be improved for extroverts when administering reading tests with the inclusion of rest pauses in order for accumulated reactive inhibition to dissipate. Hull's 1943) theory of reactive inhibition as applied to Eysenck's (1957) personality postulated provided the basis for the study.

The Junior Eysenck Personality Inventory was administered to 281 fourth-grade students for possible subject selection as extreme introverts or extreme extroverts. Subjects selected (45 introverts and 45 extroverts) were randomly assigned to one of three treatment conditions totaling 15 introverts and 15 extroverts per treatment group.

The Metropolitan Achievement Test (MAT), Elementary Reading (Form C), 1958, was administered to each treatment group. One testing treatment was conducted as standardized; one alternating 10 minutes of test and 10 minutes of rest until standardized time limits were called; and one with no rest pauses. The total reading raw score values obtained on the three subtests served as the criteria for statistical analysis.

A treatment by levels design was used to determine the effectiveness of the three treatments (testing conditions) across the two levels (introverts and extroverts) with the significance level set at .05. A two-way analysis of variance was used to investigate the interaction effects on reading performance between introverts and extroverts when tested by three differing treatments. After finding nonsignificant interaction effects, the main effects (performances of introverts and extroverts) were investigated. A two-way analysis of variance was used to further describe the no-interaction effects.

The treatment conditions made no statistically significant difference in the MAT performance of extroverts or introverts; however, the total performance of extroverts was significantly greater than that of introverts.

# INTELLECT "PROCESS" USED FOR COMPREHENSION OF VARIED DISCIPLINE AREAS

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The intellect might be defined as the station at which a given sensorial stimulus is received through neurological impulses. These impulses, each with their own measured intensity and frequency, are matched, through contrasts, with previously stored data. The results of the relationship are either stored or produced as an observable output product, for example, language or art. Comprehension can be viewed through the following formula:

$$\frac{M \quad \overset{\text{to}}{\overline{\hphantom{xx}}} \quad (M) \quad + \quad P}{E_v}$$

M = matter

P = position in (time) space

E = individual experience

v = variable (unique unto the individual)

In order for a communication between two individuals to take place, the "receiver"* must approach the same base reference used by the "sender." The idea "approach" has been suggested because the individual is a unique composite of his perceptions of data and cannot be expected to supply the identical focus used by the "sender." Because of a general acceptance of given references to matter (word-ideas) one may *approach* the intended base references so that a degree of communication may take place.

"The boy was at the store."

The sender used a "boy" with a base reference of a 6-year-old. The receiver used her concept (base reference) of a 26-year-old at the store. "Store" might be a small grocery store (to the sender) but the receiver might use a supermarket as a base reference. Yet, unless there is further. or previous, input data, one may approach the communication but not duplicate it. This idea has been duplicated many times when several people witness an act and a variety of explanations are given. Each person us[illegible]heir own unique base references, individual perceptions, when proces[illegible] stimulus data.

A mathemat[illegible]ample of the need for a general base reference might be this pro[illegible]: 1/2 plus 1/3. They cannot be added, even though both are fractions, until a common base denominator (a compatible base reference) is found. Similarly, when a Russian talks of democracy and an American talks of democracy, both are discussing government, but until the common denominator is exposed, what they have said cannot be equated.

The general problem of comprehension has two general areas of concern. The first area inovlves the sender: Does the sender provide, within his communication, a set of contrasts so that the receiver can process the data as close to the sender's intended meanings as possible? The second area of concern is whether there is an awareness on the part of the receiver of the general means of communication through language. Specifically, the relationship of matter to matter and the provided references locating it in space (amount) (time), and the idea that we know through contrasts.

Each discipline uses a given set of data. It has become a body of knowledge because of the similarity of the matter being discussed. However, all data have, or should have, a common ground for their inquiry. First, the source of inquiry is the human being and his intellect. Second, the human being is attempting to understand the varried aspects of the environment (universe) in which he lives. A communication to another human being is one in which the investigator wishes to share observations and experiences with another. The third, and most neglected, is how the matter under investigation relates directly to the source of the inquiry––the human being. Disciplines have become ends unto themselves, so much that investigations and educational goals have as their end knowing a specific set of facts––facts for the sake of facts: "I passed my course so now I don't have to remember that junk anymore." Newman (1973) writes:

> The enlargement (of the mind) consists, not merely in the passive reception into the mind of ideas hitherto unknown to it, but in the mind's energetic and simultaneous action upon and towards and among those new ideas, which are rushing in upon it. It is the action of a formative power, reducing to order and meaning the matter of our acquirements; it is a making the objects of our knowledge subjectively our own, or to use a familiar word, it is a digestion of what we receive, into a

> substance of our previous state of thought; and without this no enlargement, unless there be a comparison of ideas one with another, as they come before the mind, and a systematizing of them. (pp. 134-135)

In "Science and Education" Thomas Huxley (1910) writes:

> The subject-matter of biological science is different from that of other sciences, but themethods of all are identical; and these methods are:
>
> 1. *Observation* of facts--including under that heading the artifical observation which is called experiment.
> 2. That process of tying up similar facts into bundles, ticketed and ready for use, which is called *comparison* and *classification*, the results of the process, the ticketed bundles, being named *general propositions*.
> 3. *Deduction*, which takes us from the general proposition to the facts again--teaches us, if I may say so, to anticipate from the ticket what is inside the bundle. And finally:
> 4. *Verification*, which is the process of ascertaining whether, in point of fact, our anticipation is a correct one.

Huxley continues:

> But I shall be asked at once, do you mean to say there is no difference between the habit of mind of a mathematician and that of a naturalist? . . . To which I would reply, that nothing could be further from my thoughts. But different habits and various special treatment of two sciences do not imply different methods. (pp. 52-53).

The poet, novelist, composer, or artist also observes, compares, and contrasts, and in sharing experiences through various codes communicates those experiences to his fellow humans. The source of the communication is the human intellect, observations of matter found in the environment (universe), and ultimately relating these observations through a code to others so that they too might share these experiences or observations--these are the alpha and omega of comprehension.

Bruner (1973), in his observation of the mental process, states that "perception is an act of categorization" (p. 1). This reflects the process through which matter is separated through a contrast, for matter cannot be understood by itself but only in comparison to something else.

So what does this tell us in reference to comprehension; First, it suggests that if a given written communication does not, within the communication, provide the necessary base references for a common denominator, we as educators must recognize it as a tremendous source of error if left to the individual's base reference. Second, it suggests that contrast to given matter must be present within the communication for understanding; otherwise it must be supplied. Third, opportunity must be available for the learner to separate and classify the data presented, for we know one item through another, never in isolation. Fourth, if the learned data are to have any meaning they must be relevant to the individual human being and must be connected to the individual's immediate observations of his environment, not an end unto itself, facts for facts sake, but their relations to the whole of being. Fifth, if a learner is to know, then the process through which ideas are known must be made clear to him at the onset of learning. How one knows must be clear to the sender and receiver alike.

Questions to ascertain whether or not a person perceives data are used in every discipline area. Just what are we asking for? A clarification might help reveal some answers.

*Who--what--which*?
Asks for the *matter* under consideration (the prime matter).
Examples of other matter supporting the prime *matter* might also be given (matching or contrast).

*Where?*
Asks for a reference in space (Are contrasts or matches given within the communication?).

*When?*
Asks for the location of the matter; in time (time being used to measure matter in space); are contrast or matches given?

*How?*
Asks for a relation of one item to another in a matter, time or space sequence.

*Why?*
Asks for an individual to use an external base reference in relation to a given observation and relate the new experience with previous knowledge (sometimes this might be supplied by the receiver from his past knowledge).

Organization of data in a pattern for clarity of comprehension should include this type of pattern.

*Units* Items for learning (data).

*Relations* The relativity of one matter to another in space (amount), (time), for example on--off, big--small, hard--soft, is--was, front--back.

*Classes* Groups of similar items put together because of a base relation (reference), for example, blue–all other colors, slave--free, odd--even, positive--negative.

To summarize, this author views humans as having a capacity unto their constructed beings, relative to their species. Their language, when used in communication, is inseparable from thought. Their observable behavior is the end result of the development of their interaction between experience and the mental manipulation of an input stimuli through the intellect. That knowledge is gained through the fundamental relativity of contrast, and for clarity of comprehension both sender and receiver should be made aware of the "process."

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# A KERNEL DISTANCE THEORY FOR READABILITY

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Traditional readability formulas measure passage difficulty by some syntactical difficulty measure, such as sentence length, and some vocabulary difficulty measure, such as word frequency or average length of word in syllables. Yet, it is quite possible to have exactly the same sentence length and exactly the same vocabulary with varying sentence difficulties. For example, try to rank the following four sentences in order of difficulty (from easy to hard):

A. After the rain ended we went to the park.

B. We went to the park after the rain ended.

C. We, after the rain ended, went to the park.

D. We went, after the rain ended, to the park.

I postulate, and have verified on some tryouts, that the typical difficulty ranking of those four sentences would be: B, A, D, C. If it is true that there is a consistent difficulty ranking of these types of sentences, obviously most traditional readability formulas cannot explain the differences.

I, therefore, am postulating the Kernel Distance Theory, which holds that the nearer the kernel is to the beginning of the sentence, the easier the sentence, and the less distance between elements of the kernel, the easier the sentence. For the purposes of this theory, we are calling the kernel the subject element, the verb element, and when present, the object element with the object element loosely defined as the propositional phrase as it is in the perceeding example.

There is a minor and further refinement of the Kernel Distance Theory which states that the distance between the verb and object causes less difficulty than the distance between the subject and verb. Distance can be defined as number of words, though in practice it is often the embedding of a phrase or clause.

The Kernel Distance Theory is restated below in the form of three hypotheses:

1. Increasing the distance of the kernel from the beginning of the sentence increases the difficulty of the sentence.

2. Increasing the distance within the kernel increases the difficulty of the sentence.

3. Distance between the subject and verb causes more difficulty than distance between the verb and object.

The following illustrates these hypotheses-in action. The sentences have been ranked in order of difficulty (from easiest to most difficult). The subject is labeled with an *S*; the verb with a *V*; and the object with an *O*. The embedded clause has been circled to show how it is moved around to create "distance" in various locations.

S V O
1. We went to the park after the rain ended.

S V O
2. After the rain ended we went to the park.

S V O
3. We went, after the rain ended, to the park.

S V O
4. We, after the rain ended, went to the park.

The ease of the sentence ranked first is explained by the facts that the kernel is at the beginning (hypothesis 1) and that there is no distance or separation in the kernel (hypothesis 2). Sentences 3 and 4 are harder than 1 and 2 because there is distance from the beginning of the sentence for at least part of the kernel (hypothesis 1), and there is distance within the kernel (hypothesis 2). Sentence 4 is harder than sentence 3 because the separation occurs between the subject and the verb rather than between the verb and the object (hypothesis 3).

Note that the theory operates with the following constraints or controlled variables (a) Vocabulary is not changed, (b) Sentence length is not changed, though the syntax is admittedly different, and (c) Meaning is largely unchanged. Meaning cannot help but be influenced by syntax, but an attempt has been made to keep meaning within fairly tight bounds.

The reason meaning is influenced by syntax is that part of comprehension is interpretation and emphasis. On one level of comprehension it is possible that all four sentences in the example mean the same thing, but on a more complex level differences in emphasis might be noted.

One of the major points of the Kernel Distance Theory is that syntax can be altered and that this alternation may not show up in sentence length, but it will show up in rankings of sentence difficulty and perhaps other measures of comprehension.

I view the Kernel Distance Theory as being a relatively simple method of gauging syntax difficulty that could carry readability formulas one step beyond the sometimes over simplification of sentence-length measure. This would be particularly useful in adding accuracy to existing formulas. In adding precision, it might enable formulas to be applied to printed material to which it is now difficult to apply them, such as with short passages. There are times when it is difficult to get three or more random 100-word passages; test items are an obvious example, and mathematics texts are another.

A further concern of readability formula developers is the author. Most formulas are meant to be used after the passage is written. When an author or an editor sits down with the formula in hand and attempts to alter the writing to fit the formula, it is possible to invalidate the formula results. The Kernel Distance Theory might be of definite assistance to authors who sincerely want to "write to grade level" without knowing exactly how.

The Kernel Distance Theory is offered as a theory, not a fact. It is hoped that it will stimulate discussion, research, verification, and applications.

# DEVELOPMENTAL CHANGES IN MEMORY ATTRIBUTES OF GOOD AND POOR READERS

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Memory for a word can be conceived of as a collection of attributes representing types of information encoded in such a manner as to differentiate one memory from another and to serve as retrieval cues (Underwood, 1969). Underwood and Freund (1968) concluded that adults' memory for words is dominated by their associative property relative to their acoustical property. Similarly, studies of the attribute dominance in memory for words of second or third and sixth graders suggests that the acoustic attribute is dominant for the younger subjects, and the associative attribute is dominant for older subjects, with dominance inferred from the nature of errors on a recognition task. The purpose of the present study was to determine if such developmental changes can be said to characterize both good and poor readers in grades two and six.

A procedure previously used to detect differences in attribute dominance for adults (Underwood & Freund, 1968) and modified for use with children (Bach & Underwood, 1970) was used in the present study. Essentially, subjects were presented with a list of 40 words sequentially for learning. Subsequently, each subject was given a recognition test in multiple-choice format with each item having four alternatives consisting of a correct word, a highly probable associate of the correct word, a word acoustically similar to the correct word, and a word with neither acoustic nor associative similarity to the correct word. Attribute dominance was inferred from differences in the types of errors made on the recognition task.

## Method

The 40 words to be learned and the words used on the recognition test as distractors are presented in Table 1. Details of the procedures used for selecting the acoustic and associative distractors are presented in Bach and Underwood (1970).

Each subject was tested individually in a quiet room. Words to be learned were printed individually in lower case letters on a 9" x 12" card and serially presented at a 5 second rate. Upon presentation both the subject and the experimenter pronounced the word. Subjects were

## Table 1

### Words Used on the Recognition Test*

| Correct | Associate | Neutral | Acoustic |
|---|---|---|---|
| cat | dog | put | sat |
| bad | good | dot | bag |
| boy | girl | cap | toy |
| lamp | light | deep | lamb |
| hard | soft | keep | card |
| hop | jump | ask | top |
| sell | buy | ice | tell |
| game | party | air | name |
| wood | tree | baby | would |
| round | sun | color | sound |
| better | more | rope | letter |
| clean | neat | road | seen |
| new | old | cry | who |
| ride | car | pipe | hide |
| chair | table | part | bear |
| pail | sand | front | nail |
| bird | cage | pencil | heard |
| burn | fire | ruler | turn |
| snow | sled | cake | show |
| shoe | foot | push | blue |
| give | take | add | live |
| bed | sleep | once | said |
| cow | milk | sign | how |
| day | night | corn | say |
| high | low | city | lie |
| glad | happy | box | had |
| book | story | kind | took |
| chief | police | dress | leaf |
| just | about | again | must |
| fast | slow | farm | past |
| cent | penny | town | sent |
| drink | water | gate | think |
| race | run | been | face |
| smile | laugh | soon | while |
| leg | arm | fun | beg |
| strong | kite | open | bring |
| boat | sea | tiny | goat |
| room | house | time | broom |
| talk | speak | horn | walk |
| far | near | wish | jar |

*From Bach and Underwood (1970, p. 293)

informed, prior to the study trial, that they were to try to remember each word, since they would be asked to pick each word out from among other words. Immediately after the study trial, each subject was asked to choose the word he had previously studied from a set of four displayed on an 18" x 24" card with one of the four words for each item displayed in each quadrant. The test was subject-paced; the only requirement was that the subject choose a word from each recognition item display. Order of presentation for the study trial was the same as in Table 1 with 10 of the first 20 words of the study trial and 10 of the last 20 words of the study trial appearing in the first 20 items of the recognition task. Beyond these constraints orders were random on the recognition task.

Subjects consisted of 40 children, with 10 good readers and 10 poor readers at both the second- and sixth-grade levels. Good readers were selected from the upper three stanines on the Metropolitan Achievement Test and poor readers from the lowest three stanines. Three subjects in the poor reader groups were at the fourth stanine but were judged by their teachers as poor readers.

The foregoing procedures yielded a grade (2) by reader level (2) by error type (2) design with grade and reader level being among subject factors and error type within subject factor. Number of errors for each type were analyzed via the analysis of variance.

**Table 2**

**Mean Recognition Errors as a Function of Error Type Grade, and Reader Level**

| Reader Level | Error Type | | | |
|---|---|---|---|---|
| | Associative | Acoustic | Neutral | Total |
| Second Grade | | | | |
| Good | 4.05 | 3.25 | 2.65 | 9.95 |
| Poor | 4.40 | 5.60 | 4.70 | 14.70 |
| Total | 4.23 | 4.42 | 3.68 | 12.33 |
| Sixth Grade | | | | |
| Good | 5.00 | 3.65 | 3.15 | 11.80 |
| Poor | 3.20 | 2.50 | 1.25 | 6.95 |
| Total | 4.10 | 3.08 | 2.20 | 9.38 |

## Results

Mean recognition errors for the various subject groups are displayed in Table 2. The analysis of variance summarized in Table 3 indicated that the effect due to grade and reading level of subjects as well as the type of error made are not statistically reliable. However, the interactions of grade by reading level ($F = 11.07$; $df = 1, 75$; $p < .01$); error by grade ($F = 6.73$; $df = 1{,}76$; $p < .05$); and error by reading level ($F = 7.44$; $df = 1{,}76$; $p < .01$) all are statistically significant. Each of these interactions is further examined by evaluating the simple effects of each factor with its interacting partner. The results of these analyses are summarized below.

**Table 3**

**Summary of Analysis of Variance**

| Source | df | MS | F |
|---|---|---|---|
| Grade | 1 | 21.76 | 3.02 |
| Reading Level | 1 | .16 | $<1$ |
| Grade X Reading Level | 1 | 79.81 | 11.07* |
| Error (a) | 76 | | |
| Error Type | 1 | 6.81 | 2.88 |
| Error X Grade | 1 | 15.88 | 6.73** |
| Error X Level | 1 | 17.55 | 7.44** |
| Error X Grade X Level | 1 | 3.68 | 1.56 |
| Error (b) | 76 | 2.36 | |
| Total | 159 | | |

* $p < .01$
** $p < .05$

Consider first, the grade by reading level interaction. Here the total number of errors (acoustic and associative) serves as the dependent variable. The simple effects of reading level at both the second ($F = 10.11$; $df = 1.79$; $p < .01$) and sixth grades ($F = 12.07$; $df = 1, 79$; $p < .01$) are significant, but the direction is reversed when the grades are contrasted. Poor reading second graders ($\bar{X} = 5.00$) made more errors than their good reading peers ($\bar{X} = 5.00$) made more sixth graders ($\bar{X} = 2.85$) made fewer errors than good reading sixth graders ($\bar{X}$ = 4.33). When simple effects of grade at each reading level are considered, the grade difference for poor readers indicates that more errors were made by poor reading second graders than by poor reading sixth graders ($F$ = 25.64; $df$ = 1, 79; $p <$ .01). There was no reliable difference between the grades when good readers were considered (F = 2.52; $df$ = 1,79; $p <$ .05).

When the simple effects of this type of error are considered at each grade there is no difference ($F$ = 1.00; $df$ = 1, 79; $p >$ .05) between associative errors ($\bar{X}$ = 4.23) and acoustic errors ($\bar{X}$ = 4.43). At the sixth-grade level, however, associative errors ($\bar{X}$ = 4.10) are made more frequently than acoustic errors ($\bar{X}$ = 3.08) with $F$ = 8.90, $df$ = 1, 79 and $p <$ .01. Conversely, when grade effects are evaluated for each error type, there was no difference between grades for the associative attribute ($F$ = 1.00; $df$ = 1, 152; $p <$ .05). The grade difference for phonemic errors was significant ($F$ = 7.62; $df$ = 1, 152; $p <$ .05) with sixth graders making fewer errors than their younger peers.

Finally, consider the error type by reading level interaction. The simple effects of error type for poor readers ($F$ = 1.00, $df$ = 1, 79; $p >$ .05) yielded a non-significant difference between associative ($\bar{X}$ = 3.80) and phonemic ($\bar{X}$ = 4.05) errors. When the good readers are considered, ($F$ = 9.79; $df$ = 1, 79; $p <$ .01) associative errors ($\bar{X}$ = 4.52) were made more often than acoustic errors ($\bar{X}$ = 3.45). Neither reader level difference for associative errors ($F$ = 2.19; $df$ = 1, 152; $p >$ .05) or acoustic errors ($F$ = 1.50; $df$ = 1, 152, $p$ .05) were not significant although there was a tendency for good readers to make more associativ eerrors and poor readers to make more acoustic errors.

## Discussion

The results of this study are not in complete accord with the developmental trends found by Bach and Underwood (1970) in that for second graders the acoustic attribute did not dominate the associative in a statistically reliable way, altough there was some slight movement in this direction. Consistency, for the older subjects, was observed, with the associative attribute demonstrating dominance over the acoustic.

Good readers, regardless of grade, tended to show associative dominance, whereas their poorer reading peers displayed no dominance as indicated by the non-significant error by level by grade interaction and the significant error by level interaction reported in the findings. Interestingly, poor reading sixth graders made fewer errors than their younger peers, which is a reversal of the age-related findings of Bach and Underwood (1970); whereas good readers did tend to make more errors as a direct function of grade placement. Apparently poor readers become better at the task as a function of age, while still tending to make acoustic errors, whereas good readers become poorer at the task while making more associative errors. Here we speculate that poor readers may be continuing to process words as basic units, and words presented in isolation are processed and recognized with greater accuracy, whereas good readers more attuned to using contextual cues and the like are more prone to error as they grow older. Hall and Crown (1972) and Light and Carter-Sobell (1970) provide useful paradigms for studying associative and acoustic errors in word recognition by adults and children when target words are embedded in sentences. The approaches used by these investigators seem not to have been employed with good and poor readers. Such approaches, in a real sense, go beyond the features of words as determiners of false recognition and raise the issue of the role of such features in varying contexts as defined by sentences. Of course, one can go further and ask questions concerning the false recognition of sentences, themselves embedded in a larger context.

The differential reading performance of good and poor readers has a long and mixed history, one which still reflects considerable gaps in our understanding as well as disagreement and controversy with regard to the nature of these differences. Of late, however, memorial processes have begun to be investigated in the framework of some notably sophisticated, interdisciplinary settings (Farnham-Diggory, n.d.).

In spite of its obvious import, memory has only relatively recently been an incorporated feature in basic reading research with children, such as Calfee's (1974) work on testing conditions, which serves as an important focus on the structuring of task environments:

> When the situation was altered so that memory was required, the error rate increased substantially, slightly more so for low-ability than high-ability students, and to the same extent whether the instructions were clear or not. All kinds of errors became more likely, but the greatest increase was in failures to mark the correct alternative; it appears that the children simply forgot what they were looking for. (Calfee, 1974, p. 19)

While not necessarily agreeing as to what should be done to enhance the performance of both good and poor readers, Oakan, Weiner and Cromer's (1971) work on the relationships between word identification skills, organization abilities, and the subsequent degree of comprehension shares certain points of view with Frith's (1974) notions of internal schemata for yet a smaller unit – letters – in good and poor readers. Moving to the level of phonetic segmentation and segmentation into syllables – the first of which has been found to be more difficult than the second for beginning readers – the work of Liberman et al. (in press) has provided a challenging force toward extending our understanding of short-term memory effects for both good and poor readers. Most of the efforts cited above, however, may well be diminished as potential contributions to knowledge if their design and interpretation suggests what Jenkins (1974) has recently and cogently referred to as those "common sets of unexamined beliefs and attitudes that both directed and limited our research and theory in many ways." Building on the work of former graduate students (Bransford & Franks, 1971), Jenkins has proposed a *contextualist* formulation, one in which there would be no place for, among others, the presupposition that "words were the fundamental units of language. To me this was natural and obvious" (p. 785). He further supported his argument by citing Sachs (1967), whose more recent study (1974) also points up the durative characteristic of *meaning* over *form* when subjects are asked about a sentence embedded in a story context.

In brief, it would seem that children's use of context, however defined in reading and learning to read (Klein, Klein and Bertino, 1974) must be taken into account. Otherwise research efforts, ours and those reviewed here, and subsequent contributions risk being reflections of what Jenkins (1974) called "a metatheoretical trap" and what Goodman aptly referred to some time earlier as being "caught within the confines of the word" (Goodman, 1969, p. 26).

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# TESTING PHONICS SKILLS IN CONTEXT

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Reading experts generally agree that all reading teachers need to be proficient diagnosticians so that they may detect reading weaknesses early and plan effective remedial activities. A major deterrent, however, is a shortage of highly dependable diagnostic tests. Many measures of both the formal and informal type are in use but their validity and reliability are often questionable. This is as true of diagnostic phonics tests as of any other type.

The study reported here compared results on three types of widely-used phonics tests with those obtained on a test of children's ability to apply phonics knowledge to decode unknown words appearing in meaningful context. The latter test was designed to be a close approximation of the real-life situation in which phonics principles are daily applied by children in their reading.

A widely-used group test of phonics is the McKee Inventory of Phonetic Skills. It requires the children to choose a written word (from among four) that contains the same sound element (initial or final consonant, or medial vowel) as one pronounced by the tester.

A test of children's ability to give the sounds of printed single consonant letters, or consonant letter teams, presented in isolation has had a long history of use in reading clinics and classrooms. Such a test seems suitable to give to children who have been taught phonics as a series of stimulus-response bonds.

A third phonics test, of more recent vintage, requires the child to complete a written word fragment so that when it is completed it will correctly spell a word pronounced by the examiner.

In the discussion that follows tests of the four types described above are referred to as the *context* text, *McKee* test, *isolation* test, and *completion* test.

The phonics tests used in the investigation were specially constructed for the study. Ten consonant sounds were chosen for study (b, h, m, p, s, t, w, ch, gr and sp). These test items were constructed for each sound for each of three of the tests: the McKee, completion, and context. On the isolation test there was only one item constructed for each sound. The items were constructed so they were likely to be valid for the test population used. The procedures used in test construction and administration are described below.

## The Subjects

One hundred thirty eight second graders were identified by their teachers as having an incomplete knowledge of phonics. The group contained approximately equal numbers of boys and girls, had an average IQ of 99.6 and closely resembled a normal population in other important respects. They ranked at the 34th and 35th percentile in word identification and word meaning subtests of the Burnett Reading Survey Test. Their comprehension was at the 2nd percentile level on the same test.

The vocabulary of the reading textbooks from which the subjects had been instructed was studied and a corpus of words for context testing was developed that would (a) test the elements chosen for study, but (b) had not been part of the word list taught to the children.

The test items were constructed so that blending problems in pronouncing the words were held to a minimum. This was done by combining the sound elements being tested with words like *at, up,* and *in* that had been learned as sight words. Each word was checked against lists of words whose meanings were likely to be known by second graders. Those words likely to be unfamiliar in meaning were discarded.

In constructing the context test each test word was placed in a sentence in which all of the other words were likely to be recognized by the children. Care was taken so that the three words testing each sound element were placed in different syntactical positions. Each sentence was printed in primer type on a card containing a picture logically related to the sentence to be read. Care was taken to avoid having the picture reveal the exact word being tested.

Before administering the context test, the examiners determined if the test words were known as sight words by presenting them tachistoscopically to each child.

In administering the context test the examiner used three or four spoken sentences to establish meaningful context for the sentence, showed the child the card containing the picture and sentence, and asked him/her to read it. Any word the child could not read (except the test word) was supplied by the examiner.

The other three tests used in the study were constructed to test the same letter-sound elements. The procedures used in item construction and test administration closely approximated those known to be followed with such tests.

The four tests were administered in random order to each subject so that no more than three days elapsed between the time a specific child was given the first and last tests.

## Study Findings

The most important findings were as follows:

1. Ninety percent of the words included on the context test were visually *unfamiliar* to the children. As a group they were able to use their skills to decode almost ½ of the words.
2. On the other three tests the mean percentage correct varied from 80 to 92%.
3. The differences in the mean test scores between the context test and each of the other three phonics tests were significant at the .01 level.
4. Forty percent of the errors on the context test were on words for which the children knew the initial sound and the stem to which it was attached – an indication of problems in blending.
5. The differences in performance of boys and girls on the four phonics tests were not significant.
6. The context test had a correlation of .65 and .62 with the word identification and word meaning subtests of the Burnett Reading Survey Tests.
7. When the responses of individual subjects to individual items on the different phonics tests were examined, little agreement in performance was discovered.
8. The use of partial correlation procedures revealed that the context test accounted for a much higher proportion of the variance on the Burnett subtests than did any of the other phonics tests.

## Implications of the Findings

To the extent that the subjects used in the study are typical of those in the population in general, a number of implications seem to follow logically from the findings.

Since the context test very closely simulates the real-life situation in which a child is most frequently called upon to apply his phonics skills, it logically offers the most efficient type of diagnostic instrument.

The abilities used to decode an unfamiliar word when it appears in context are different from those used in responding to items of the type appearing on tests of isolated letter sounds, multiple choice tests calling for sound-letter matching (the McKee type test), or to printed word fragments visually completed when the word is pronounced. A context type test calls for a substantially higher level of skill than the other three. Neither the McKee type, the isolation test, or completion test are suitable for accurate diagnosis of the application of phonics skills in context.

The assumptions on which much testing of phonics skills have been based have not been optimally helpful ones, if this study is an indication of their validity. Tests like the McKee, isolation, and completion types should not be used by diagnosticians. The context test technique used in this study for the measurement of phonics skills is logically and statistically a much more defensible one.

Problems in blending known phonic elements to recognize meaningful words in context are serious enough to warrant special attention in teaching phonics and in diagnosing phonics weaknesses.

# MATURE READERS' AFFECTIVE RESPONSE TO THREE SPECIFIC PROPAGANDA DEVICES: LOADED WORDS, NAME-CALLING, AND BORROWED PRESTIGE/BORROWED DISLIKE

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Theoreticians of reading, rhetoric, and critical thinking have long postulated the existence of a set of rhetorical techniques called "propaganda devices" (Black, 1952, pp. 166-175), and reading methodologists have consistently urged that readers be taught to be wary of them (Kottmeyer, 1947, pp. 151-170). This instruction usually consists of pointing out to readers the existence of these devices, labelling each device in some appropriate way, and then providing the readers with either in situ or simulated practice--examples of each device at work--in hopes that these readers will finally come to be able to spot, recognize, and resist them in their own future reading.

Research into the area of propaganda devices, however, has been very sparse. Aside from a few correlational studies reporting the statistical relationships between ciritical-thinking tests and various reading-test subscores, most research studies (Osborne, 1939; Nardelli, 1957) have dealth with the recognition of these devices by students before and after training but not with the measurement of reader response to any of them. This paper presents the results of a series of studies wherein this latter task was attempted.

## Procedures

The first step taken was the creation, by the two investigators, of a set of stimulus-materials which could then be experimentally manipulated. Chosen for format was the newspaper interview, wherein a personality is descirbed, quoted, and presented briefly in a "human interest" sort of way. Ten such interviews were created, each built around a fairly bland, ordinary person who had recently come into public prominence for some particular reason. The final cast of characters came out as follows: a young chess player who recently became state champion, a local lady recently recognized as an outstanding quiltmaker, a visiting guitarist who recently became prominent, a local teacher retiring after almost 50 years of service, a French student visiting America for the first time, a playwright discussing opening-night crowds, a visiting film-maker discussing the problems of his particular craft, a lady fisherman well-known locally for her phenomenal luck at fishing, the lone female graduate of a large medical school, and a college football player recently named Most Valuable Player of the Year. Each article ran from 150 to 200 words in length, about ¾ of a typewritten page, and all 10 were balanced about equally between quotes and descriptions.

Following each interview, on the same page, were five, five-step semantic-differential scales, with the polar adjectives Warm-cold, friendly-unfriendly, likeable-unlikeable, modest-conceited, and kind-unkind posed at their opposite ends. The reader's task, was (a) to read each article, (b) to form in his mind some sort of mental image of the person being interviewed, and (c) to mark each scale in terms of where he felt the interviewee would fall on the continuum it represented.

These, then, were the basic stimulus-materials used in the following series of studies: 10 simulated newspaper articles, each followed by response-scales for the recording of reader response to the person being interviewed.

## Study One

The first propaganda device to be studied was "loaded words," that is, the use of words relatively neutral in denotation but carrying predictably positive or negative connotative implications. For this study, substitute words for "said" were used.

At five points within each interview, either directly preceding or directly following a quotation, either five positive or five negative said-substitutes were inserted. Examples of these would be "commented," "sneered," "chuckled," "gloated," "noted," and "bragged." Twenty articles now existed (a positive and negative form of each of the original 10 and these were bound into two test forms, one with articles 1, 3, 5, 7, and 9 positive in tone, articles with 2, 4, 6, 8, and 10 negative, and the other with these positive-to-negative orders reversed. Instructions for the subjects were written, and the test instruments were ready for use.

These test forms were then administered to several different groups of readers (junior-high students, high-school students, and adults), and the responses of these readers to the two forms of the articles were compared.

### Table 1
### Mean Levels of Positive Reader-Response to Positive and Negative Versions of Each Stimulus-Article

| Articles | Said-Substitutes N = 127 Adults | | Adverbs N = 120 Eleventh Graders | | Nouns Plus Clauses N = 74 Eleventh Graders | | Organizations N = 56 Adults | |
|---|---|---|---|---|---|---|---|---|
| | Positive Versions | Negative Versions | Positive Versions | Negative Versions | Positive Versions | Negative Versions | Positive Versions | Negative Versions |
| Chessmaster | 18.1 | 14.8 | 19.3 | 16.1 | 18.7 | 16.6 | 16.0 | 14.3 |
| Quiltmaker | 18.3 | 15.1 | 19.0 | 18.9 | 19.9 | 14.4 | 19.2 | 13.8 |
| Guitarist | 14.5 | 13.3 | 18.3 | 15.6 | 18.6 | 15.4 | 13.9 | 13.8 |
| Retiring Teacher | 17.0 | 12.3 | 19.0 | 18.2 | 18.4 | 16.6 | 18.0 | 15.6 |
| French Student | 11.0 | 10.0 | 14.1 | 12.4 | 14.8 | 14.5 | 12.0 | 11.1 |
| Playwright | 17.3 | 11.5 | 22.8 | 15.6 | 18.7 | 16.5 | 18.2 | 15.7 |
| Film Director | 11.8 | 9.2 | 13.2 | 18.2 | 14.7 | 13.3 | 14.7 | 11.6 |
| Lady Fisherman | 20.7 | 16.4 | 20.0 | 17.8 | 19.9 | 17.5 | 20.4 | 19.8 |
| Woman Doctor | 17.1 | 13.6 | 18.1 | 16.8 | 19.2 | 16.5 | 15.2 | 14.9 |
| Quarterback | 19.1 | 13.9 | 19.6 | 17.4 | 18.4 | 18.1 | 17.6 | 14.6 |

For scoring, each scale-response was scored 5, 4, 3, 2, or 1 from the most positive end of the scale to the most negative, and each subject's five scale-scores for each article were then summed. This allowed total-group levels of mean positive response to each article-version to be computed. Table 1 reports the mean scores found for one of the groups sampled. In this case, as well as in all the others, the mean levels of positive response were always higher to the "positive" said-substitute versions than to their negative said-substitute counterparts, and it was thus concluded that only five words per article could clearly have a strong effect on readers.

### Study Two

For the next study a different type of "loaded word" was used: adverbs either positive or negative in connotation. The same basic articles were again used, with the "positive" said-substitutes, but this time three adverbs per version were inserted, one following a said-substitute early in the article, one about in the middle of the article, and one near the end. Examples of the sorts of adverbs used would be "quietly" or "belligerently," "warmly" or "coldly," and "cheerfully" or "sarcastically."

The same sets of response scales were again used, again two forms of the test were built upon alternating positive-to-negative orders, and again several groups of readers were administered the sets of exercises. Table 1 reports these results, too, and once more the mean levels of positive response were always higher to the "positive" versions than to the "negative" versions, but this time the only differences in the two versions were three words.

### Study Three

The study was addressed to a second hypothesized propaganda device, "name-calling," wherein a person or an issue is linked to some descriptive word or label considered to be of positive or negative valence to the reader.

Once more the original basic articles were used, but with the following changes: at one point within each article-version, at a place where the interviewee's name had originally been used, a positive or negative noun was inserted, followed by an adjective clause describing that noun. In the Chessmaster article, for example, where before simply the name "Wagner" had appeared, it now read either "Wagner, a non-elitist who feels anyone can master the rudiments of chess in a few hours if they really try" or "Wagner, an elitist who looks down upon non-intellectuals who can't master chess." Or, in the article about the retiring school teacher, where it had originally read simply "Miss Lister," it now read either "Miss Lister, a cultured humanist who feels the human race would soon revert to savagery if it weren't for the few custodians of culture like herself" or "Miss Lister, an earnest humanitarian who feels each person should be educated to the full limit of his own potential."

Again data wre collected and analyzed, and again the positive-tone articles consistently drew higher mean levels of positive reader response.

### Study Four

The final study to be reported was an investigation of a third general type of propaganda device, "borrowed prestige/borrowed dislike," wherein a person or an issue is indirectly linked with something or someone of high or low status or esteem to the reader.

All the linkings done in the study were with organizations. In the two versions of the Guitarist article, for example, the guitarist was cited as having either "just received an award from Talent Search Associates, an organization devoted to seeking out and honoring outstanding American young people in the Arts" or "shortly after receiving a special World Socialism through Artistic Exchange Award at the Russian Embassy in New York;" and in the Graduating Lady Doctor article, she was identified as having gone through school on a grant provided either by "the American Cancer Society, a group devoted to sponsoring more medical education and research related to conqurering mankind's dread diseases" or "the Victorians, a religious group advocating the return of compulsory religious-education courses in all secondary schools." In all cases, care was taken to not suggest that the interviewees were either members of these groups or in any way necessarily advocates of the groups' policies; only an indirect association was shown. Still, however, the same results were found: the mean levels of positive reader-response were all in the hypothesized directions.

## Summary

In summary, then, three different specific propaganda devices (the first one in two forms) were experimentally manipulated in connection with the ten original articles: loaded words, name-calling, and borrowed prestige/borrowed dislike, with the hypothesized directions of response consistently borne out by the data collected. Clearly these propaganda devices do affect readers and do warrant further research.

For the investigators' part, their intent is to continue on down the hypothesized lists, of propaganda devices, to "band wagon," "card-stacking," and all the rest, and then ultimately perhaps to look, even at some of the effects of combinations of these devices. Vance Packard once said that the consumer's only protection against what he called "The hidden Persuaders" was to know as much about these persuaders as do those who employ them, and probably the same general principle holds true for reading teachers whose students are faced with equally volatile "persuaders" in print.

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# A SYSTEMATIC EXAMINATION OF THE RELIABILITY OF THE CLOZE PROCEDURE

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## ABSTRACT

The purpose of the study was to determine the reliability of the cloze procedure using an alternate form reliability measure and internal analyses techniques. The cloze procedure has been used in over 250 research papers, and, while studies have included a determination of the reliability of the procedure, the determination has not been a primary purpose.

Subjects for the study consisted of 311 students enrolled in grades 4-9. Two passages written at grade level 5-6 were selected from social studies material and mutilated with an every fifth word deletion pattern. Each subject was administered both passages.

Alternate form reliability was determined from scores subjects obtained on the two passages. A Pearson product-moment correlation coefficient of .743 ($p < .01$) indicated that performance across the two passages remained relatively stable.

Internal analyses indicated a substantial degree of internal consistency. "Alpha" coefficients for the two passages were .877 and .884. The standard errors of estimate were 2.79 and 2.53. Correlations of each cloze item with the total test score indicated a substantial degree of internal consistency.

The data were reanalyzed after placing subjects into three levels of test performance: high, middle, and low. Results for the specified score levels indicated that reliability of the cloze procedure differed dependent upon the level of success attained by the group on the cloze tests. The least successful group revealed the highest degree of consistency, while the most successful group was the least consistent.

The findings for the specified score levels indiated: (a) cloze scores should be interpreted as falling within a range of scores rather than as an accurate approximation to a true score, and (b) establishment of a single criterion for success on all cloze passages may be a questionable practice.

# THE EFFECT OF STUDENT-CONDUCTED COMPONENTIAL ANALYSIS UPON CONCEPT DIFFERENTIATION IN A PASSAGE OF SOCIAL SCIENCE CONTENT

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Componential analysis is a procedure used by anthropologists (Romney & D'Andrade, 1964; Wallace & Atkins, 1960) to describe semantic domains and their variations across cultures. In brief, the procedure involves (a) listing all words in the particular semantic domain under study and (b) grouping these words, usually in schematic form, into categories, hierarchies, contrasting sets, and so on. Such an analysis leads to an attempt to discover a few underlying dimensions (similar to distinctive features in phonology) upon which the domain is based. Although the procedure appears to have theoretical implications in anthropology, psychology, and psycholinguistics (Slobin, 1971), this investigation was concerned with its application as a pedagogical tool.

Barron and Stone (1973) used a form of componential analysis, termed a graphic post-organizer, in a recently completed study. Subjects in the experimental group were asked to read a 3,000 word passage about mental health. Following the reading they were placed in groups of three and provided with index cards upon which were typed key terms from the learning passage. Their task was to arrange the cards in a fashion which depicted relationships among the terms. Analysis of the data obtained on a test of vocabulary relationships revealed a significant difference ($p < .05$) favoring the experimental group over a control group which read the passage on two occasions.

The present investigation had two related purposes. First, it attempted to partially replicate the Barron and Stone (1973) study with a slight different population of students. The earlier study was undertaken with 10th and 11th grade students classified as "above average" to "superior" according to their school's tracking system. The current research was conducted with 10th graders categorized as "below average" to "average" accoring to this tracking scheme.

Second, the study attempted to determine whether these students could be taught to independently conduct a "componential analysis" using a passage of social science content.

## Procedures

The subjects (N = 108) 10th grade students were randomly assigned, within regularly scheduled classes, to three treatment conditions: student-conducted componential analysis (S-C), teacher-assisted componential analysis (T-A), and control (C).

In all situations, students were asked to read a 3,000 word passage on mental health. Although the content of the passage was assumed to be relatively unfamiliar to them, its readability was measured at grade 8th according to the Blair formula.

### Treatments

Students in the S-C group received three 50 minute training periods related to the application of componential analysis.

**Day 1.** On the first day of training the procedure was briefly described and demonstrated. The students were shown that words, representing the key concepts in a reading passage, could be listed and arranged in a schema or diagram to depict relationships among these terms. The students then read an 800 word selection on the intelligence of animals. Finally, they were provided with a partially completed analysis in which certain terms from the passage were placed in the schema by the teacher, while others words were represented by blank spaces. The students' task was to supply the missing terms. Feedback was provided through teacher-led discussion.

**Day 2.** On the second day the procedure was briefly reviewed and the S-C group read another 800 word passage, this one relating to the human muscular system. Following the reading, three person groups were formed and each group received a set of index cards containing key terms from the reading passage. The groups were instructed to arrange the cards in a way that depicted relationships among the words.

**Day 3.** During the last training period the students read a 1500 word passage about government. They were provided with three terms which formed natural subdivisions within the passage, but they had to individually select remaining vocabulary and order it into a personal diagram or schema. Upon completion of this task, feedback was again provided by the teacher.

Following the training sessions, the remainder of the experiment was conducted on two successive days in periods of 50 minutes on each day. During the first period, students in the S-C group read the experimental learning passage. On the following day, the passage was redistributed and the students were asked to undertake individual componential analysis.

The T-A group followed essentially the same procedures described in the Barron and Stone (1973) study. On the first day of treatment, students read the learning passage. On the following day, the students were provided with a brief explanation and demonstration of componential analysis. They were randomly placed into groups consisting of two or three persons and provided with 3" X 5" index cards upon which were typed terms or groups of terms from the passage. The students they were instructed to arrange the cards in a way to depict relationships among the terms.

The C group condition involved reading only. Students assigned to this group read the passage on two successive days.

### Outcome Measure

The outcome measure, termed the Mental Health Vocabulary Relationships Test, was administered 48 hours after the conclusion of treatment. This instrument was designed to assess students' knowledge of hierarchical and parallel relationships which existed among the terms in the learning passage and was

Outcome Measure

### Outcome Measure

The outcome measure, termed the Mental Health Vocabulary Relationships Test, was administered 48 hours after the conclusion of treatment. This instrument was designed to assess students' knowledge of hierarchical and parallel relationships which existed among the terms in the learning passage was patterned after an instrument discussed by Cronbach (1943). It consisted of 25 items. Each item contained four terms, three of which were directly related. The students' task was to indicate which word was least related to the other three. In final form, this instrument yielded a reliability coefficient of .76.

## Results

In the statistical analysis, two hypotheses were of interest. Stated in substantive form, they were:

$H_1$: The mean of the S-C group on the Mental Health Vocabulary Relationships Test will be greater than the mean of the CC group.

$H_2$. The mean of the T-A group on the Mental Health Vocabulary Relationships Test will be greater than the mean of the C group.

The mean and variances for each of the groups were as follows: S-C group 11.9, 8.28; T-A group 11.12, 6.36 and C group 9.59, 8.76, respectively the total group scores ranged from 4-16 with a mean of 10.84 and a variance of 8.28.

The results of two orthogonal planned comparisions (Kirk, 1968) conducted to evaluate differences between means showed that the mean for both experimental groups were significantly higher than those of the controroup, S-C group $t$ (57) = 3.10, $p < .01$ and T-A group $t$ (54) = 2.10, $p < .05$. Based upon this analysis both alternative hypotheses were accepted.

## Discussion

Ausubel (1968) has expressed a belief that a key factor in reading/learning tasks involves a meaningful learning set or "a disposition to relate new mateiral non-arbitrarily and substantively to existing cognitive structure" (p. 37). Everyday examples of students who do not manifest such a set might involve (a) those who read at a very superficial level, glossing from point to point, or (b) readers who plod slowly and methodically through text materials in an attempt to assimilate everything.

The major benefit derived from componential analysis, as used in the study, may involve the possibility that it negates such types of ineffective reading/learning behaviors. In order to successfully conduct a componential analysis the learner must deal with essential vocabulary in a meaningful fashion. Thus, the procedure appears to be an effective study procedure in situations in which reading/learning tasks involve a large number of vocabulary concepts which have not been previously differentiated by the student. Furthermore, the process can either be assisted by teachers for particular learning tasks or taught separately as a study skill.

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# A COMPARISON OF UNDERLINING STRATEGIES FOR IMPROVING READING COMPREHENSION AND RETENTION

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## ABSTRACT

Research on the use of underlining to improve both immediate and delayed recall of prose material by high school students is described and analyzed. Student underlining (with and without prior instruction), instructor underlining, and non-cued reading of textbook-like material were examined, along with interactions between the criterion test reading scores and the prior reading achievement scores of the subjects in the study. Data indicated that underlining, whether performed by the students or by the instructor before the students' reading, resulted in increased immediate and delayed recall. Specifically, the following results were noted; (a) The groups which underlined for themselves and the group which received instructor-underlined material all scored significantly higher on the criterion test than the control group on immediate recall. (b) There were no significant differences between groups on delayed recall, but scores approached significance in the hypothesized direction. (c) The groups which did their own underlining scored significantly higher than the instructor-underlined group on immediate recall, but not on delayed. (d) There was a significant interaction between prior reading ability for all groups and the criterion test scores on delayed recall, but not on immediate. It appeared that the use of underlining resulted in significant improvement in reading comprehension and retention of textbook type materials. An analysis of the various cueing methods used in this study indicated that active participation by the reader in underlining is more beneficial than using material underlined by the instructor.

# READING ABILITY AS A MEDIATOR OF THE EFFECTS OF SEMANTIC FEATURES ON SHORT TERM MEMORY FOR WORDS

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A variety of tasks, including free recall, have been used to investigate memorial processes with experiments employing free recall primarily using some measure of organization of the items recalled to index encoding. Wickens (1972) had identified a number of attributes or features along which words are encoded using a variant of the Petersen-Petersen short-term memory paradigm in which four trials are presented with a shift in features occurring on the fourth trial and the percent release from proactive inhibition used as the index of encoding. Using this paradigm, taxonomic category appears to be a highly salient attribute in that it produces substantial release. A two-trace model of memory (Atkinson & Shiffrin, 1968) considers these features as facilitators of transfer from short-term memory into a more permanent long-term store. Atkinson and Shiffrin further suggest that the typical U-shaped curve resulting from free recall protocols reflects long- and short-term store in that the primacy effect arises because there is more time for rehearsal and transfer to long-term store for the first few items in the list while the recency effect (items at the end of the list) reflects items still in short-term memory.

Since short-term memory is affected by the amount of time between presentation and recall, Glanzer and Cunitz (1966) reasoned that manipulating delay periods would index decay of items in short-term store. A 30-second delay between the end of the list and the cue for recall which was filled with a rehearsal preventative task was sufficient to reduce the recency portion of the list to some probabilistic asymptote. O'Connor (1974) extended the work of Wickens (1972) and Glanzer and Cunitz (1966), in that he demonstrated a maintenance or enhancement of the recency portion of a free recall list under 30-second and 0-second delay conditions when the last quarter of the list represented a shift of taxonomic category. In the delay condition this suggests an encoding effect which facilitates transfer of terminal items (recency portion of list) into long-term store.

The present study replicated O'Connor's methodology with good and poor readers in order to investigate whether such groups were differentially sensitive to delay prior to recall or to taxonomic shifts at the end of free recall lists.

## Method

Subjects were 56 second graders from a suburban school district. Good readers were defined as those who scored in the upper three stanines of the Reading portion of the Metropolitan Achievement Test, with poor readers defined as those who scored in the lower three stanines.

A free recall paradigm was employed with 0-second and 30-second delay. Lists were tape recorded and words presented at a 2-second rate, with each subject instructed to repeat each word immediately after hearing it. A bell sounded after all words in the list were presented and subjects in the 0-second delay condition began recall. In the 30-second delay condition subjects were cued by pointing to numbers on a card, with each subject instructed to read the numbers as rapidly as possible. After 30-seconds the experimenter said "stop" and each subject began recall. Two lists were utilized, control and experimental. The control list contained 20-body parts words, the experimental list presented 15 of the body parts words and 5 animal names in the terminal input positions. One trial administered to each subject.

There were a total of eight groups with seven subjects each comprising all combinations of the control and experimental lists, delay/no-delay conditions and good and poor readers. This resulted in a 2 x 2 x 2 analysis of variance design with amount recalled from the five terminal input positions used as the dependent variable.

## Results and Discussion

Means for various reader groups, list, and delay conditions are presented in Table 1. Inspection of these means suggests that poor readers profited from the experimental lists, since their performance in both the delay and no-delay conditions was superior to their performance with control lists. Further, they performed somewhat better in the no-delay condition relative to the delayed condition. The good readers present a markedly different picture, with their means being essentially homogeneous across control and experimental lists, and surprisingly, they appear to have done somewhat better in the delay condition when compared with their no-delay performance. These general observations are formally evaluated by the analysis of variance summarized in Table 2. The effect due to the reader group classification ($F = 5.86$; $df = 1, 48$; $p < .05$) is statistically significant but not generalizable over lists due to the significant list x reader interaction ($F = 4.69$; $df = 1, 48$; $p < .05$). Means for the list x reader interaction are control (good = 2.79; poor 1.50) and Experimental (good = 2.64; poor = 2.57). Tests of the simple effects of reader classification for each list yielded a significant difference ($F = 10.51$; $df = 1, 48$; $p < .01$) favoring good readers ($X = 2.79$ ) over poor readers ($X = 1.50$) when the control list was considered with no such effect as found for the experimental list ($F < 1.00$). When list differences were considered

**Table 1**

**Means for Lists, Reader Groups and Delay Conditions**

| | Control List | | Experimental List | |
|---|---|---|---|---|
| | Good | Poor | Good | Poor |
| Delay | 2.86 | 1.29 | 2.86 | 2.43 |
| No Delay | 2.72 | 1.72 | 2.43 | 2.72 |

for each class of reader, the experimental list ($X = 2.57$) produced superior performance ($F = 7.30$; $df = 1.48$, $p < .01$) to the control list ($X = 1.50$) when poor readers served as subjects. The good readers showed no significant discrepancy ($F < 1.00$) when control and experimental list performance was compared.

The failure to replicate the findings of Glanzer and Cunitz (1966) and O'Connor (1974) concerning an attenuated recency effect due to delay prior to recall appears to be due to the good readers who actually did somewhat better with delay, although not reliably so. Poor readers were closer to expectation, with reduced performance due to delay and with enhanced recency under both delay and no-delay conditions atributable to taxonomically shifted lists. These observations, although

## Table 2

### Analysis of Variance Summary

| SOURCE | MS | df | F |
|---|---|---|---|
| Cells | 16.27 | 7 | |
| List | 3.02 | 1 | 2.74 |
| Delay | .02 | 1 | $<$1.00 |
| Reader | 6.45 | 1 | 5.86* |
| List x Reader | 5.16 | 1 | 4.69* |
| List x Delay | .16 | 1 | $<$1.00 |
| Reader x Delay | 1.44 | 1 | 1.31 |
| List x Reader x Delay | .02 | 1 | $<$1.00 |
| Error | 1.10 | 48 | |

*$p < .05$

provocative, were not of sufficient magnitude to produce appropriate significant interactions. Similarly, poor readers profited from the shift at the end of the experimental list, whereas good readers did not. One explanation may simply be an inadequate indicator of short-term memory capacity leading to spurious ceiling effects. Our experimental list shifted taxonomic category for the last five items and consequently recall from the last five positions for each list served as an estimate of the short-term memory. A recent review of methods for measuring primary memory (Watkins, 1974) presents six different approaches to estimating short-term memory. One of the simplest due to Tulving and Patterson (1966) is a score based on the last four positions of a free recall list. Other estimation procedures reviewed by Watkins (1974) yield somewhat different results. The suggestion here is that if our finding were to be replicated employing other methods of estimating short-term memory capacity with approximately manipulated lists, then substantive differences between good and poor readers in terms of either short-term memory capacity or facilitative effects of taxonomic category or other features in transferring items in short-term store to long-term store would be indicated. As a caveat, we hasten to add that our findings are restricted to the auditory modality and represent words presented serially in a free recall paradigm. Whether the features of words and their effects upon encoding and retrieval when presented serially in the acoustic modality generalizes to paradigms that very modality or higher order contexts seems highly dubious (cf. Crowder, 1972; Jenkins, 1974; & Perfetti, 1972).

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# SUCCESSFULLY EFFECTING CHANGE ON PERSONALITY VARIABLES THROUGH ACADEMIC SKILLS TRAINING

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## ABSTRACT

Most reading and study skills instructors would agree that improvement in study skills ought to stimulate improvement in self-concept. They would also expect to find positive changes in other personality variables. Existing research supports these ideas, but the designs used are not universally rigorous. This tightly designed study clearly demonstrates a positive and exciting relationshp between skills improvement and personality growth.

Subjects were 108 metropolitan community college students from behavioral science classes who volunteered to participate in testing on personality, skills, and aptitude measures. All were given an opportunity to indicate interest in a short course in efficient study.

A three-group pretest-posttest design was employed. Those students desiring the skills course were randomly divided into two groups. One group served as experimental; the other, as a motivated control. A third group, termed as unmotivated control, consisted of students interested in the testing phase only.

Pretesting included the Omnibus Personality Inventory, Academic Feelings Questionnaire, MHBSS Reading Test, a Reading at Efficient Rates exercise, and the Shipley-Hartford Verbal Recognition Test.

The experimental group then received a 3 week, 9 hour efficient study course. Topics included reading efficiency, comprehension attacks, text study techniques, listening and notetaking, test preparation and taking and time scheduling and behavior control. Posttesting followed for all groups.

The experimental group was predicted to perform better at posttesting on rate, comprehension (main idea, study type, organization, and detail), and selected personality variables (thinking introversion, autonomy, complexity, anxiety, response bias, intellectual disposition, and academic feelings).

Results indicated (a) differences on most variables for the experimental group over the control groups; (b) few differences between the motivated and unmotivated controls; and (c) changes in the predicted directions on all variables for the experimental group.

Conclusions tentatively suggest the use of skills instruction (or therapy) to not only improve skills but also to effect change on certain personality variables.

# THE USE OF THE RELATIVE FREQUENCY COEFFICIENT TO IDENTIFY HIGH INFORMATION WORDS AND TO MEASURE READABILITY

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The research project reported in this paper was undertaken to explore the relationship between the Relative Frequency Coefficient (RFC) as identified by Finn (1973) and Cloze Difficulty as described by Bormuth (1966). Two hypotheses are tested; (a) the key word technique identifies words of high cloze difficulty, and (b) cloze difficulty can be predicted from key word data.

If the first hypothesis is supported, it will reinforce Finn's argument that the key word technique identifies words with the highest information yield (in an information theory sense). If the second hypothesis is supported, it will suggest that the key word technique be explored as a measure of readability, since cloze has been established as a valid measure of readability (Bormuth, 1966). The advantage would be that, since the RFC can be calculated entirely by computer, readability could be calculated by computer.

## Relative Frequency Coefficient

It is well known that in any communication some words carry more of the message than others. It is also well known that some words are used more frequently than others. In a million words of contemporary written American English, for example, the word *the* appears 69,971 times, while the word *English* appears only once, and *Rockport* appears twice (Kucera & Francis, 1967). Word frequency has been found to correlated well with various measures of meaningfulness (Klare, 1968).

Computer programs have been written to identify words which ought to appear on a book index (e.g., Carroll & Roeloffs, 1969). "Words which ought to appear on a book index" is in itself a definition of "meaningful words.") The computer program takes into account two ideas: (a) rare words tend to be more meaningful than frequent words, and (b) rare words that are repeated within a text are probably more important – better candidates for the index – than rare words which appear only once. For example, if in a 3,000-word passage the word *Rockport* appears once, chances are that it is mentioned in passing–a detail an example. If, however, *Rockport* appears

10 times in a 3,000-word passage, the passage is probably about *Rockport.*

Finn (1973) wrote a computer program which assigns each word in a passage a number based on the Kucera-Francis Frequency (KFF) of the word and the number of times the word appears in the passage (Text Frequency [TF]). A simple equation was devised to determine how many more times each word appears in a text than one would have predicted from the word's frequency on the Kucera-Francis list. If a word appears 2,000 times in the million-word count, one would expect it to appear once in a 500-word text:

Ex. (1). $$\frac{2{,}000}{1{,}000{,}000} = \frac{1}{500}$$

However, for words which appear fewer than 2,000 times in the million-word count an equation like the one above does not estimate the number of times it will appear, but the probability of encountering the word once in a 500-word text:

Ex. (2). $$\frac{200}{1{,}000{,}000} = \frac{x}{500}, \quad x = .1$$

Another way of looking at the same idea is that if a word appears once in a 500-word text and appears 200 times in the million-word count, it appears 10 times more often than one would have predicted:

Ex. (3). $$(X) \cdot \frac{200}{1{,}000{,}0000} = \frac{1}{500}; \quad X = 10$$

If the same word appears twice in a 500-word text, it appears 20 times more often than one would have predicted:

Ex. (4) $$(X) \frac{200}{1{,}000{,}000} = \frac{2}{500}, \quad X = 20$$

The value of $X$ in equations 3 and 4 above is the Relative Frequency Coefficient (RFC). Ranking words from any text in terms of RFC reveals the key words in the text. It is an easy step to use this ranked list to identify important sentences and main ideas with the aid of a computer.

## Cloze Difficulty as a Measure of Information

Weaver (1949) points out that information theory is at first disappointing and bizarre–disappointing because it has nothing to do with meaning and bizarre because information and uncertainty turn out to be partners. In simplified terms the information theorist is more interested in probabilities than in meaning. A typical problem in information theory is one where a person is trying to receive a message letter by letter (in Morse Code, for example) and, because of interference in the channel, is not always certain of what letter he hears. In order to make the best guess, the receiver takes advantage of the fact that the probabilities for each letter occurring at any given point in the message are not equal. For example, the probability that the first letter in a message is *X* or *Z* is extremely low; if the person is fairly certain that the letters received are *t-h-r-*, he is quite certain that the next letter is going to be one of the five vowels.

Information theory is derived from the statistical probability of letters appearing based on actual counts of a vast number of messages; that is what Weaver means when he says it has nothing to do with meaning. A basic concept of information theory is that if the receiver is very certain of what the next unit will be, the physical occurrence of the letter yields no information. If, however, the next letter might be one of several, all with equal probability, the physical occurrence of the letter yields a lot of information; that is what Weaver means when he say that *information* and *uncertainty* are partners.

It is proposed in this paper that the cloze procedure presents us with a problem that has much in common with the typical information science problem described above. In the cloze task the printed word is the channel, and the absence of every fifth word is the interference in the channel. The precentage of subjects who fill in a given blank correctly is a measure of the information yielded by the deleted word. If 80% of the subjects supply the correct word, there is little uncertainty and little information. If 10% supply the correct word, there is much uncertainty. The deleted word bears a great deal of information.

## Exploration of Relationships

Bormuth gathered cloze data for 20 passages in his 1966 study. For the present study the five easiest passages and the five most difficulty passages were used. For each word in the 10 passages (about 250 words per passage for a total of 2,500 words) the following information was

## Table 1

**Means and Correlatins for Entire Texts: Kucera-Francis Frequently, Text Frequency, Rank by Relative Frequency, and Cloze Difficulty**

| | Means | | | Correlations With | | |
|---|---|---|---|---|---|---|
| | KFF | TF | CD | KFF | TF | RFCR- |
| All Passages | 10,311.22 | 5.46 | 308.15 | .409 | .428 | .201 |
| Difficult | 11,702.95 | 5.80 | 196.60 | .665 | .668 | .514 |
| Easy | 9,078.40 | 5.13 | 422.13* | .346 | .358 | .200 |

collected: the proportion of subjects supplying the word when it was deleted in a cloze task (Cloze Difficulty [CD]), the word's frequency in the Kucera-Francis Frequency list (KFF), the number of times the word appears in the text (TF), and the word's rank on a list of all words in the passage ranked by Relative Frequency Coefficient (RECR).

The following statistical investigations were carried out. How do PFCR, KFF, and TF correlate with CD for all words, for words in easy passages, and for words in difficulty passages. The obtained correlations are presented in Table 1. All correlations were significant at .001, but it is noteworthy that the correlations were very low for easy passages but quite high for difficult passages. In order to get a better picture of these relationships, the words were ranked by KFF within the easy and difficult passages. These ranked lists were then divided into 10 equal parts. The means for KFF, TF, and CD were computed for each 10% group of words from the rarest to the most frequent. The following facts became apparent from this analysis. (a) In the first five groups the words in the difficult passages were rarer words (low KFF) than their counterparts in the easy passages. (b) The words in every category were much higher in information in the difficult passages. (c) In the first five categories the average text frequency was higher for easy passages than for difficult passages.

## Discussion

The original hypothesis of the investigation was supported. Key words are identified by RFC were high information words in terms of CD. The value of RFC as a predictor of CD was dependent on the difficulty of the passage. There was evidence that KFF, TF, and passage difficulty interacted in a lawful way that could be determined by more sophisticated statistical techniques. The study indicated that a further perusal of this question would be profitable.

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# INTEREST AS A VARIABLE IN WORD ACQUISITION: A BRIEF REPORT

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Interest in reading material has long been considered a function of content interacting with the affect of that content on the reader. (Smith & Dechant, 1961). The assumption that this applies to the word acquisition stage as well as the comprehension and critical thinking stage of reading needs to be tested.

It is conceivable that an important variable in the interaction is the level of affect present in the material. Evidence of the independence of affect from meaning appears in a stuy by Koen (1962) which found no relationship between intensity of meaning and Nobel's *m* for emotional words. Further support comes from a study by Bloomer and Chesin (1960). Using a *C* scale of sonic affect, they found that when association values were high, positively affective nonsense syllables were recalled significantly more frequently than negatively affective nonsense syllables. These results were supported by Olson and Pau (1966) using sight vocabulary with primary school children, Krueger and Farley (1970) with adults, and Bloomer, Goldsmith, and Levine (1970) using high frequency three-letter words with fifth-grade readers in a free recall paradigm. Yet, these results were not confirmed by Haase and Aiello (1973), who varied levels of sonic affect within the class of high frequency, four-letter nouns.

The purposes of the two experiments presented in the study were to (a) continue programmatic research in this area of study, and (b) replicate the study by Haase and Aiello (1973) with fifth-grade and college students to determine whether levels of sonic affect would effect the learning of words presented serially. If sonic affect does effect word learning, it would indicate that words themselves contain a quality of interest which, irrespective of meaning, would influence the word acquisition phase of reading.

## Experiment 1

The purpose of the experiment was to determine the effects of three levels of sonic affect on the serial learning of fifth-grade readers within an auditory and visual stimulus presentation. It was predicted that fifth-grade readers would learn a serial list of pleasant sounding words more readily than unpleasant and neutral sounding words.

**Subjects**

From a total of 60 students in a fifth-grade class, 50 students with reading abilities from 5.9 to 7.9 as measured by the reading test of the Metropolitan Achievement Test were selected. From these, 30 students were randomly selected for participation. Of these, 10 students were randomly assigned to each of the three sonic affect conditions. Students were not equated on IQ, because the school system had ceased giving the tests more than five years ago.

**Stimuli**

From a method of stimulus equating presented by Haase and Aiello (1973), 16 words were randomly selected from each level of sonic affect for a total of 48 words. The 16 words within each level were then randomly assigned to either a visual or an auditory mode of presentation. Two lists of eight words each for low sonic affect, two for neutral sonic affect, and two for high sonic affect were obtained. Auditory and visual presentation conditions followed the method developed by Haase and Aiello (1973).

**Method**

In each presentation condition, students received instructions on learning words through serial anticipation. They received three practice trials prior to learning the experimental words. Students wrote their responses in experimenter-made booklets. A 3 x 8 mixed factorial design with repeated measures on one factor was used (Weiner, 1962).

**Results**

The data consisted of the number of correctly anticipated responses on each trial for each of the three levels of sonic affect.

The main effects of sonic affect in the auditory condition were not significant. Trial effects ($F$ (7,189) = 14.82, $p < .05$) and the affect by trail interaction ($F$(14,189) = 2.98, $p < .05$) were found to be significant, indicating an interdependency between level of affect and acquisition trials.

In the visual condition, the main effects of sonic affect were found to be significant ($F$ (2,27) = 7.96, $p < .05$), with positive ($\bar{X} = 6.56$) and neutral ($\bar{X} = 6.86$) sounding words more quickly acquired than negatively sounding words ($\bar{X} = 4.32$). The main effect of the trials was significant ($F$ (7,189) = 11.06, $p < .05$) as was the interaction between affect and trials ($F$ (14, 189) = 2.08, $p < .05$). Inspection of the learning curves by affect condition indicates a steady increase in learning for both positive and neutral conditions but a decidedly erratic course for the negatively affective conditions.

## Experiment 2

In order to assess the generalizability of such results, the study was replicated with a college population.

### Subjects

Paid volunteers ($N = 15$) from the second-through fifth-years of college study participated.

### Procedure

The stimuli, method, and design of the experiment were exactly the same as in experiment 1.

### Results

Main effects of. affect in the auditory conditions were not significant. Trial effects ($F\ (7, 189) = 35.11, p < .05$) and the affect by trials interaction ($F\ (14, 189) = 2.53, p < .05$) were found to be significant.

In the visual condition, the main effects for affect were significant ($F\ (2, 27) = 7.64, p < .05$) but no one level of affect was differentiated from the others. The trial effect ($F\ (7, 189) = 45.63, p < .05$) and the affect by trials interaction ($F\ (14, 189) = 3.05, p < .05$) were found to be significant. Although subjects learned over trials, no significant differences among levels of the affect by trials were found.

## Discussion

The results of both experiments suggest that sonic affect does effect word acquisition and that words themselves may, in fact, contain a quality of interest which, irrespective of meaning, would influence the word acquisition phase of reading. For fifth-grade readers, positive and neutral sounding words are more easily acquired than negative sounding words. However, for adult readers, affect within words appears to enhance learning, but which level of affect appears is, at this juncture, unclear. These findings also indicate that the effects of word affect on word acquisition are more pronounced in visual presentation than in auditory presentation. This finding corroborates the replicated study (Haase & Aiello, 1973). Further experimentation in this area should be continued, especially with college readers, as the simple effect of affect remains unclear.

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# WHY IS READING POETRY SO HARD

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Frequently, the College Reading Program personnel at Montclair State College encounter students seeking assistance in the reading, understanding and appreciation of poetry. They express and display feelings of confusion and frustration when requested or required to read poetry. This confusion and frustration is not evident in meeting their other academic requirements.

What is the basis for this confusion and frustration? It is hypothesized that one of the primary reasons for such feelings is due, in large part, to the structure and nature of poetry. Much poetry is graphically presented in written form which differs quite radically from that with which students in college are familiar.

First, from a reading point of view it means that even our best readers are trained to read primarily in materials in which the lines go to the end of the page, so it is not surprising that poetry can stump them.

More importantly, it means that poetry emphasizes something different from prose and maybe that in this difference we can begin to find an answer to why it is hard. Everyday speech, if you listen to it without filters, is highly irregular, highly repetitive. It is a series of short mostly asyntactic phrases. Beyond the associative rhythm of speech is the "rhythm of prose" (Frye, 1963, p. 24). Written prose is not like spoken conversation. It is not phrasal. Its base is the syntactic unit. It is dominated by subject and predicate and by the "logical and semantic pattern of the sentence" (Frye, 1963, p. 21.) In prose we read until we are told to stop. Various signs indicate that the prose unit has come to an end.

Now this prose sentence knows no printed barrier except that imposed by economy. Hypothetically, we could print all of our prose on an infinite ticker tape. Nothing about prose demands the stop except the syntactic unit and that can be of almost any length. And this is what we are taught to read. We train people in the most efficient ways of coping with the non-meaningful break in prose lines. We train people to ignore the ends of the lines as best they can, to get on to the beginning of the next as fast as possible.

But what happens when these same people, good readers of prose, come to poetry? They encounter a written language that in some ways is more like speech in that it is phrasal. To indicate the phrasing, the lines do not go to the end of the page. It is broken up and, with it, our prose reading habits. Not only must we attend to syntax, we must also attend to the tensions between the phrase as we see it isolated on the page and the sentence we construct in our minds. For people trained on prose, taught to read prose, encouraged by almost all the print media they encounter to revere prose as the important way of getting information, coming upon lines that demand just the opposite is confusing. Poetry demands not an extensive, rapid prose reading but a slower reading that stops and considers what is set out in each separate line before going on to the next. For prose trained readers, this process can be very difficult. Poetry asks the reader to hold the possibilities of the line in mind while he moves on to complete the syntactic unit. The way we teach reading today, this is many times asking too much.

Given, then, that poetry presents problems and that one of the primary problems is the nature of the poetic line, what can be done about it? How can we help students who come to us and, better, how can we help English teachers, present and future, to help themselves and their students?

The first thing to do, it seems to me, is to show a person having trouble with poetry that not all things worth knowing are linear *per se,* that many kinds of knowledge in their own experience come from things seen whole or from things seen in non-linear relation to other things. This should not be too difficult. You can see it in a picture or in a painting or through a microscope, or in a three dimensional matrix, or in a chart or graph, or in a football game.

Then you have to teach people that poems are involved in non-linear as well as linear kinds of knowing. Probably the easiest way to do this is to begin with concrete poetry. I remember a one word poem called "Orgasm" which said it all in the relative size of the letters. A few of these and it should be clear that prose linearity is not the only way of considering words.

From concrete to minimal poetry of the kind Kohl (1974) describes is an easy step. The minimal poem can show not only the meanings derivable from simple letter substitutions but also the meaning that can come from the relation of words to each other in space.

Moving from the purely concrete to shaped poems like Herbert's "The Altar," you can show that word and line configurations can give meanings not present in the linear sense of the words alone.

After concrete poems, probably E.E. Cummings makes sense. His meanings are often as much in the mechanics of his typewriter as in the semantic content of his words. Poems of this sort move around the page, forcing readers to take word location into account in more complicated ways. In Cummings' poems, emphasis is often supplied not only by the words themselves but also by the blank spaces around them.

Once the idea of blank space as emphasis in understood, then the shift to more conventional poems, poems where the blank spaces are almost exclusively at the ends of lines, should not be too difficult.

Here half the battle is won. The phrasal nature of poetry is being attended to. The second half of the battle involves the ability to read through phrase to get to syntactic sense. We said that poetry at this level exists in the tension between the phrase and the sentence. Unless you get the sentence sense, you lose the tension and the meaning. To get the sentence sense, you have to teach people to read through the phrase. I suspect that this may be most easily accomplished by using narrative poems and, first, transcribing them into prose – not changing the words but running the lines to the end of the page. This should be followed by reading from the same poem restored to its original form. The easier the syntax and the stronger the narrative structure, the more easily the reader will be carried through phrase. Such poems can range from the *Illiad* to the *Song of Hiawatha*.

An additional aid to reading through the phrase can be a rhyme scheme which advances the narrative. Terza rima or any accumulative rhyme scheme is good for this – selections from Dante as translated by John Giardi (1970) come immediatly to mind.

Finally, and probably most importantly, you have to train people to slow down, to read with their lips moving. A lot of poetry reading problems can be cleared up by this exercise alone. The poetic line, among other things, breaks that prose rhythm that allows the good reader to zip along using minimal cues. If he tries to read poetry at prose speeds, he gets lost.

These are just a few suggestions, not meant in any way to be exhaustive. The important thing to realize at this point is that as teachers of thinkers about advanced reading skills, we have a number of so-called good readers who cannot easily read the major works of their heritage. They are evidently not getting help with this reading problem in their English classes, and, because of the nature of English training, are not likely to get it there either. So our students are in a bind and eventually, if they and we are lucky, they get to us. If we understand the nature of that bind, the problems caused by the poetic line, then maybe we can give them a way out.

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